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A TYPICAL MOUNTAIN STREAM IN THE ARID REGION—MOUTH OF ECHO CANYON, UTAH, SHOWING WEBER RIVER

THE

CONQUEST OF ARID AMERICA

BY

WILLIAM E. SMYTHE

ILLUSTRATED

HARPER & BROTHERS PUBLISHERS
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1900

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TO

MY WIFE

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PREFACE

THE man who removes from a crowded neighborhood in New England to a sparsely settled locality in the Far West will be struck with the immensity of the country which awaits settlement and development. He will not be long in discovering that the new land possesses certain advantages of climate, soil, and other natural resources over the place whence he came. If he has the slightest interest in social and economic things, he will find himself speculating on the anomaly of surplus people in one place and surplus land in another—on the stern fact of a region of landless man and a region of manless land, and both under the same flag. Such was the author's experience; hence this book.

The materials for this sketch have been gathered by ten years of life, work, and study in various parts of the West. During that period the writer's opportunities to observe resources and institutions were unusually favorable, since his work as editor of *The Irrigation Age* and an officer of the National Irrigation Congress took him repeatedly to all the States and Territories of the arid region and to nearly every valley or settlement of special interest. These opportunities were utilized to the fullest extent. The history of colonies has more often been learned from the lips of pioneers than from books or documents. The causes of successes and failures in settlement, and the merits of various social and industrial plans suggested in these pages as best adapted to future colonization effort, have been discussed at many a western fireside with the men and women who are dealing practically with such problems. If this portion of the book has any value, it consists in the fact that on every possible occasion it has been discussed with the earnest people who are themselves engaged in making homes in western valleys.

A list of those who have been helpful to the author in assembling the facts used in these pages would include nearly all the men prominent in the irrigation work of the western States. It is not unfair, however, to make especial mention of the author's obligations to Frederick H. Newell, of the United States Geological Survey; to Elwood Mead, State Engineer of Wyoming; to A. Milton Musser, historian of the Mormon Church, and to David Boyd, historian of the Greeley Colony, Colorado.

Of the books which have been most useful in furnishing light for the larger aspects of the subject, Mr. Douglas Campbell's *The Puritan in England, Holland, and America*, Mr. Theodore Roosevelt's *The Winning of the West*, Mr. Andrew Carnegie's *Tri-*

umphant Democracy, and M. Edmond Demolins's *Anglo-Saxon Superiority*, are gratefully mentioned.

Certain chapters of the book first appeared as contributions to *The Century Magazine*, *The Atlantic Monthly*, *The Forum*, and *The North American Review*, and the author is indebted to the courtesy of the editors of those magazines for the right to reproduce them here.

The acceptance which the author's work on similar lines has found in American periodicals, and the fact of a wider interest evidenced by translations into three foreign languages, is one reason for the publication of this book. But a better one is the author's conviction that the time is ripe for the occupation of the great West by the masses of our people, and his earnest hope that this book will be of some value in throwing light upon their pathway to homes and independence.

WILLIAM E. SMYTHE.

STANDISH, CALIFORNIA, *August*, 1899.

INTRODUCTION

THE TWENTIETH-CENTURY OPPORTUNITY

The true opportunity of the American people lies not in the tropical islands of the Pacific and Caribbean, but in the vast unsettled regions of their own country. Their true mission is not to impose their dominion upon distant lands and alien peoples, but to work out the highest forms of civilization for their own race and nationality.

The advocates of colonial expansion abroad argue that hitherto we have been engaged in the conquest of this continent, and declare that this work is now done. But it is *not* done. There is room for one hundred million people in the States and Territories between the Missouri river and the Pacific Ocean. In that vast region there is a population of but three to the square mile, while in the Philippine Islands there are sixty, a density of settlement twenty times as great.

But the material opportunity is neither the single nor the most urgent claim of Arid America to the nation's attention. It offers the best field in all the world for the expansion of ideas and the development of institutions. This is no less important to mankind than the expansion of trade and the development of natural resources.

Under the policy of continental solidarity and of holding aloof from the political entanglements of Europe and Asia, the American people have grown rich and populous beyond any other nation in history. If they now choose to abandon the course which led them to greatness by the shortest and easiest path, it is not because they are compelled by physical limitations to seek another field for expansion. Or if they abandon republican for imperialistic ideals it is not because the former lacks favorable soil in which to plant and nurture new growths suited to the changed conditions of the times.

We shall see in the following pages how the national prosperity of the past came as the rich reward of developing the material resources of the continent, and how the inspiration for three remarkable eras of colonization—along the Atlantic seaboard, through the interior from Lakes to Gulf, and in the valley of the Mississippi—sprang not from lust of power or of trade, but from home-building instincts peculiar to our race and people. We shall then observe what vast resources yet remain to be used, and how the physical conditions of the vacant half-continent in the West mark its future civilization as inevitably different, in important respects, from that of the East.

INTRODUCTION

In our study of typical communities which have grown up among western plains and mountains during the past half-century, we shall see how the pioneers unconsciously shaped their institutions to suit an environment hitherto unknown to men of English speech, and how these institutions, with the tendencies they set in motion, fortunately conform to new economic conditions in which machinery and large capital play so important a part.

In our review of the States and Territories which compose Undeveloped America, we shall behold their material achievement and the state of their civilization at the close of the present century, and the wide opportunities which wait upon the future.

We shall then seek to find the relation between the crowded population and superabundant capital which have accumulated in the old States, and the surplus resources of lands, forests, minerals, and water-power lying unused in the West. We shall consider how surplus men and money may be brought to surplus resources, and applied, under sound business principles, to the making of homes, industries, and institutions in consonance with the traditions of our race and the genius of our people.

Whatever may be the nation's ultimate policy in the Pacific—whether to rule or to emancipate—the new impulse now clearly apparent in the intellectual and industrial life of that part of the world will materially assist the settlement of the Far West, and indefinitely widen the market for its products. The development of all the lands around the borders of the Pacific, the rise of Alaska and the North, the opening of Russia's new highway from Europe across Siberia to Asiatic shores, the building of the Isthmian Canal, with the cheap and ready access it will give to both the American and European coasts of the Atlantic—these great events all prophesy the rapid settlement of western America during the twentieth century. It lies there now a clean, blank page, awaiting the makers of history—the goodly heritage of our people.

THE CONQUEST OF ARID AMERICA

Part First

COLONIAL EXPANSION AT HOME

> "In 1850 she [the United States] passed Austria. In 1860 it was her motherland to whom she held out her hand lovingly as she swept by. In 1870 she overtook and passed France. In 1880 she had outstripped the German Empire; and now, in 1890, she is left without a competitor to contend with except giant Russia. All the others she has left behind. Another decade, and the sound of the rushing Republic close behind will astonish even Russia, with its eighty-six millions in Europe. Yet another decade, and it, too, like all the rest, will fall behind to watch for a time the new nation in advance, until it forges so far forward as to pass beyond her ken, when five hundred millions, every one an American, and all boasting a common citizenship, will dominate the world—for the world's good."—ANDREW CARNEGIE, *Triumphant Democracy*.

CHAPTER I

GREATNESS BY CONTINENTAL CONQUEST

THE economic greatness of the United States is the fruit of a policy of peaceful conquest over the resources of a virgin continent. Without this great item of raw material, the finished product which the world acknowledges in the industrial America of to-day would have been impossible.

The true career of the American people as a race of empire-builders dates not from the founding of Jamestown, New Amsterdam, and Plymouth, but from the surrender of Cornwallis at Yorktown and the subsequent inauguration of George Washington as the first President of the United States. The early settlers were merely European sentinels standing guard over a treasure of continental magnitude which they neither comprehended nor appreciated. The tobacco-raisers of Virginia, the fur-traders of New York, and the religious enthusiasts of New England had no conception of a national destiny or mission. They looked backward to the civilization whence they had come, rather than forward to the conquest and subjugation of the mightier empire on whose eastern shores they had set their reluctant feet.

Only at the close of the successful war for independence did the world begin to realize that the American was to be the master of the new continent for all time, and that his rule must move westward as naturally and inevitably as the sun in its course. Only when the new government, hewn out with the sword and cemented with the blood of its citizens, had been finally and firmly established, did the heterogeneous elements in the sparsely settled original States crystallize into a national spirit and a national character. From that hour the material development of the New World began in earnest. The people labored as with the vim and courage of him who works for himself. Men began to dream of an America which should be richer and more populous and powerful than even Europe.

The war was over—the war was begun! England had been shaken off by force of arms, and the other European ties would be loosed by the arts of diplomacy; but it remained to wage war on the forest, the plain, the desert, and the mountain, and to create a better civilization than the world had seen. What millions of men and billions of dollars were employed and rewarded in the process—what workshops, and railroads, and farming districts were created in the wilderness—what cities, with swarming thousands of inhabitants, with homes and colleges and hospitals, were erected in the midst of the primeval silence—what States were carved from the woods and prairies—what unexpected commerce, borne in undreamed-of steamships, was sent to whiten the unexplored inland seas!

It is in the answer to these questions rather than in the poet's pæan to democracy that the true explanation of the economic progress of the nation will be found.

It is not to be denied that the fact that the United States was heralded throughout the world as a "free country" attracted millions of immigrants, nor that popular government and complete immunity from the demands of royal tribute left enterprise unhampered to a degree hitherto unknown. But a vast commerce can no more find sustenance solely in the written constitution of a country than a starving prospector in the mountains can satisfy his appetite with scenery.

It seems worth while to lay strong emphasis upon this point, because the somewhat general acceptance of the notion that America is the product of its institutions, rather than that its institutions are the product of America, has obscured the causes of past prosperity and belittled the importance of our undeveloped resources. Not until this fact is understood and acknowledged is it possible to comprehend, even vaguely, the incalculable importance of the undeveloped regions in the western half of the United States.

At the close of the Revolution the United States consisted of a fringe of settlements mostly confined to the Atlantic coast and the banks of important rivers on the eastern slope of the Alleghanies. Nominally, the national domain extended westward to the Mississippi river, but practically there was no development beyond the thirteen original States. Even there the natural resources of the country had scarcely been touched. Boston had a population of about eighteen thousand, New York of about thirty thousand, Philadelphia of about thirty-five thousand, Baltimore of about fifteen thousand. Richmond, Charleston, and Savannah, though of some importance politically, were mere straggling hamlets.

Detroit, St. Louis, and New Orleans were French outposts in the wilderness. Buffalo, Cincinnati, Cleveland, and Chicago; Omaha, Kansas City, Denver, Salt Lake, and San Francisco—these and scores of other cities now populous and powerful—were hidden in the womb of time. Of the country between the Alleghanies and the Mississippi far less was known than the world now knows of Africa. The vast domain lying between the Father of Waters and the Pacific Ocean was neither as well explored nor as perfectly comprehended as the Arctic region is to-day.

When the men of the new Republic turned their backs on the Old World, in the double sense of politics and industry, and faced the continental opportunity which awaited them, they entered upon the fiercest war of conquest in all history. And the spoils of that war were to be in proportion to the magnificence of the task.

The first effort at the subjugation of the wilderness was directed to the fields and the streams. The forest clearings were extended that agriculture might find room for expansion. The trees felled in the process were floated in the rivers to saw-mills driven by the current. The logs, transformed to lumber, supplied the material for millions of comfortable homes. In the mean time, the new farms fed the growing population of the towns, while a myriad of workshops, improved by inventions of which a robust necessity was the prolific mother, consumed and manufactured the textile materials from field and pasture.

The step from the crude employments of the frontier to the manifold occupations of a modern industrial life was easy and natural. Fostered by a generous policy of protection, and blessed by long years of peace, the work of development went on from generation to generation. In New England the raw material on which the workmen labored in fashioning a civilization was poorer than elsewhere. And yet it was on that sterile soil, in the midst of those rocks and hills, that industrial pre-eminence was first to be achieved. A citizen of Massachusetts once made the just boast that "not one drop of water flows from our hills to the sea until its power has been three times multiplied by the mill wheels." Every stream was lined with factories, nearly every town had its peculiar industries and its growing crowds of skilled laborers, supporting the stores and shops with their trade, and filling the schools with their children.

Not only in New England, which owed its serious energy to the example and character of its founders, and its fierce industrial enthusiasm to a system of free labor, but equally in New York, in New Jersey, in Delaware, in Pennsylvania, and southward to the Floridian peninsula, the army of labor marched on with irresistible advance. It scaled the crests of the Alleghanies and opened yet greater valleys to the energy of men. It tunnelled into the earth and brought up the hidden stores of coal and iron ore. It tapped the subterranean reservoirs of natural gas and oil.

With the rapid growth of a many-sided economic life the need of improved facilities for internal transportation arose and grew yearly more urgent. The natural water-courses, navigated by rafts and sailing craft, did not long suffice. The army of labor was set at work in building great highways and digging canals. Then came the steamboat, and, finally, the railroad with its iron horse.

Thus it was that the work of taming the wilderness went on with increasing fervor. Thus it was that thirty-two new States were added to the original thirteen. Thus it was that the national population was increased fourteen-fold, and that cities rivalling the greatest urban centres in the Old World, in size and wealth and power, were developed on the site of the colonial villages of the early days. Thus it was that the Republic was able to welcome, and to absorb into its apparently insatiable industrial system, the millions of immigrants who flocked to its shores.

During these days of rapid material expansion over new areas, Uncle Sam was the proprietor of the most gigantic employment bureau on earth. He had enough work for his own prodigious family of sons, and for the overflow of all the families across the sea. He offered the highest wages in the world-wide market. He distributed his abounding prosperity through all channels of trade, all classes of industry, all grades of society. He made men and communities rich first by employing their energies in the conversion of the wilderness into a civilization, and paying them roundly for the work; then by the rise in values, or "unearned increment," which comes with population and development; finally, by the premium, or interest, upon capital thus acquired. All this was the logical fruit of a policy of continental conquest bravely undertaken, magnificently achieved.

Behold the story of national prosperity in the form of a few clear-cut figures, divested of all rhetorical clothing: In a little more than one hundred years the area of farms increased from sixty-five thousand square miles to over one million square miles. The number of persons engaged in the agricultural industry in 1890 was ten million seven hundred thousand—more than two and a half times the entire population in 1790. In acres the total amount of land classed as farms by the last census was nearly six hundred million, of which nearly four hundred million was under actual cultivation, the rest being woodlands. The number of individual farms was four million six hundred and fifty thousand. The annual product was worth four billion dollars. "In ten years," says Mr. Andrew Carnegie, in his inspiring book, *Triumphant Democracy*, "a territory larger than Britain, and almost equal in extent to the entire area of France and Germany, was added to the farm area of America."

Marvellous as this statement is, it exhibits but one item in the record of continental conquest which conferred such phenomenal prosperity upon the American people in the past. Agriculture is the basis of civilization, and upon the foundation so quickly and thoroughly laid, the new nation hastened to erect the superstructure of a complex industrial life. The existence of an enormous population on the farms furnished a great field for manufactures. This industry now employs between four and five million workmen, who annually receive and expend nearly two billion dollars in wages, and create an annual product worth nearly nine billion dollars.

Agriculture and manufactures—both finished products wrought by millions of workmen from the raw materials of the new continent—combined in demanding the most extensive arrangements for internal transportation ever provided on the face of the earth. The total railroad mileage at the last census was one hundred and sixty-three thousand five hundred miles, which is more than that of all European countries combined. Of this vast mileage almost one-half was built between 1880 and 1890. When it is remembered that each of these miles stands for about fifty thousand dollars expenditure—the cost of construction and equipment—and that the work employed an army of laborers and skilled artisans, who in turn consumed great quantities of agricultural and manufactured products, it is not difficult to realize that the railroad development contributed largely to the national prosperity in the past. It was, of course, the direct result of the great process of material conquest which was going on.

To the same cause was due the employment of nearly three million people in trade and transportation; of nearly five million in professional services, of three-quarters of a million in mining. The grand result is seen in the fact that the national population grew from less than four millions in 1790 to more than sixty-two millions in 1890, while the total wealth mounted to the incomprehensible sum of sixty-five billion dollars.

Such are the stupendous results of the labors of a great people applied to the resources of a virgin continent. Other people have possessed energy and genius, and two of the European nations have enjoyed the blessings of self-government. If republican institutions would alone guarantee such results in the future, it is hardly to be imagined that the sternest monarchy could withstand the demand for their adoption. But the transcendent factor in the result was the continental expanse of marvellous resources awaiting the labor and genius of man.

Can there be any question that the abounding prosperity of the American people during the first century of their national life was due to this luminous fact? Can there be any reasonable doubt that if the policy of material conquest over new areas can find another field on which to operate, and that if it be entered upon with the old vigor and faith, it will confer another century of prosperity upon the nation so fortunately endowed?

CHAPTER II

THE HOME-BUILDING INSTINCT OF THE AMERICAN PEOPLE

SPEAKING in broad terms, there have been three great eras of colonization in the United States. All of these eras have been well defined, intelligible, and eventful. They peopled successively the Atlantic coast, the trans-Alleghany region from Lakes to Gulf, and the valley of the Mississippi. Taken together, they made virtually complete the conquest of Eastern America, and in Eastern America over ninety per cent. of the national population dwells to-day.

A study of these historic movements reveals a striking fact. It is a fact which throws a flood of light on the American character, explaining much that has occurred in the past and furnishing secure ground upon which to base predictions of much that is to happen in the future. The American colonist, from Plymouth in Massachusetts to Plymouth in Idaho, has fixed his eyes on one star, which has shone out serene and steady through the clouds of religious persecution, of war, and of economic strife. That star stood for home. To build a home for himself and his children, to live there at peace with his neighbors and the world, to make better institutions for average humanity—this, when the subject is viewed as a whole, is seen to have been the consistent aim of American colonization from the beginning.

There are a few exceptions to be noted, but they are not of sufficient importance to affect the general result. Such exceptions are the settlement of California, and of certain localities in the Rocky Mountains, during periods of excitement following the discovery of gold. Another instance was the settlement of Kansas as a means of preserving the equilibrium between the free and the slave States. But these are isolated instances, of far more moment in an historical than in a numerical sense. The settlers of the United States have been moved by very different instincts and motives than those which impelled the Romans, the Normans, and Danes to settle at different periods in Britain. The great movements of population in the Middle Ages were armed conquests for spoils, and power, and martial glory. Those, indeed, were the ruling motives among Europeans and Asiatics until comparatively recent times. When these motives ceased to operate, they were succeeded by another which was equally sordid, even if more humane. This was the lust for trade or for sudden riches. This it was which impelled the settlement of Australasia by the English, of the Spice Islands by the Dutch, of South America by the Portuguese, of Cuba by the Spanish, of Africa by all of these and by the French and Germans as well. Thus the hosts which swarmed out of Europe to make new settlements all over the earth were principally marshalled under the flag of avarice. It was far different with the men who, at various periods during the last three hundred years, conquered the soil of the United States and extended the frontiers of its civilization.

The settlement of the New World was largely inaugurated by those who fled from religious persecution. But it cannot be said on that account that their ruling motive was not the desire to enjoy the security of a home. Religious sentiment lies very close to the hearth-stone. Upon its human side, at least, it has nothing in common with politics. Still less is it related to the struggle for gain. It was because they could not live at peace in Europe, because they could not be certain of life or tenancy in any one place, and therefore could not accumulate a competence for their children, that the religious enthusiasts fled over the sea. The Puritan in Massachusetts, the Baptist in Rhode Island, the Quaker in Pennsylvania, and the Catholic in Maryland, looked less passionately upon their spires and crosses than upon the babies in their cradles, the vegetables in their gardens, and the smoke which curled from their chimneys.

It is true that there were many fanatics in the seventeenth and previous centuries to whom religion was dearer than home; but it was not the axes of these fanatics that felled the American forests. Their devoted spirits were freed at the stake, or at the block, or their poor bodies festered in foul prisons. It was the element whose love of home and kindred was too powerful to permit them to suffer martyrdom, even though their convictions forbade them to eschew their religious practices, who inaugurated the first era of colonization on these shores. Theirs are the first footprints in our history, and they lead straight to the home and the fireside.

The second real era of colonization came with the end of the Revolution. Previous to that event the trans-Alleghany country was but vaguely known as a whole. Daniel Boone had, indeed, built his cabin in the wilds of Kentucky, and adventurous spirits had begun to follow him from Virginia and the Carolinas. James Robertson and John Sevier, leading the hardy backwoodsmen of the Scotch Presbyterian faith, had begun the making of Tennessee. The French Creoles had lived for three generations in the slumberous repose of widely scattered villages in the Ohio Valley, and had gathered in some numbers at New Orleans. But the hour for the real movement of population to the westward of the mountains had not struck. When it did strike, it found the home-building instinct of the American people instantly and passionately responsive to its summons. It was the returning veterans from the War of Independence who lent the first great impulse to the new emigration. Hardened by years of out-door life, thoroughly weaned from the atmosphere of the town and the shop, finding their places on the farms largely filled by boys who, during their absence, had grown to self-reliance, if not to manhood, these war-worn veterans were not unwilling to transfer their battle-ground from the sea-coast to the wilderness, and to fight for homes as ardently as they had struggled for political independence.

During the next thirty years the population of Kentucky leaped from about seventy thousand to over half a million, and that of Tennessee from thirty thousand to over four hundred thousand. Ohio, Indiana and Illinois, which had no place in the census of 1790, were credited, respectively, with nearly six hundred thousand, one hundred and forty-seven thousand, and fifty-five thousand, in 1820. The movement went on without pause until the outbreak of the great rebellion. It was even more plainly marked with the home-seeking character than the earlier settlement of the seaboard States. We need not in this instance seek the home-loving instinct under the religious motive. The circumstances and the methods of the new army of settlers revealed the supreme object of their emigration.

The lands along the coast and in the rich valleys of tidal rivers had been well occupied by a people who enjoyed substantial prosperity, not only as the reward of their industry, but also as the result of their priority of settlement. The country had grown. It was plainly upon the verge of a larger and more rapid expansion. These circumstances enhanced the value of property and laid the foundation of many family fortunes, especially where the colonial hamlets had grown to be towns, and promised to become populous cities. The early-comers and their descendants were being steadily enriched by the unearned increment. Those who were thus established had no occasion to move, but their less fortunate neighbors longed for homes of their own, and were ready to take quick advantage of the opportunity which the war and the Ordinance of 1787 had opened for them in the West. These people were almost universally poor in a worldly sense, but rich in courage and intelligence and full of the spirit of empire-builders. They were no more a class of greedy speculators than were the pioneers of New England. They emigrated in order that they might improve their condition. They were home-seekers pure and simple. Placed completely beyond the influence of Europe, and acting under a new spirit of nationality, the people concerned in our second era of colonization developed a rugged Americanism before unknown. This spirit was typified in the character of Abraham Lincoln, who was one of its products.

The third era of colonization followed the War of the Rebellion, as the second had followed the War of the Revolution, and largely for the same reason. The cessation of hostilities and the disbandment of the armies turned back into the paths of peace hundreds of thousands of veterans. They were filled with an over-mastering desire for homes. They longed for a chance to work for themselves, as their fathers and forefathers had done. Uncle Sam was still proprietor of a vast estate of virgin and fertile soil. The homestead law beckoned to the returning hosts like the finger of fate. The result was the phenomenal settlement of the Upper Mississippi Valley and the creation of States where the old soldier reigned all but supreme. In a period of twenty years after the war Nebraska jumped from a population of twenty-eight thousand to nearly half a million; Kansas from one hundred thousand to a round million; Iowa from six hundred thousand to a million and six hundred thousand; Dakota from five thousand to one hundred and forty thousand, while Minnesota also added more than half a million to her total.

The movement never paused until it encountered an obstacle beyond the power of the individual settler to overcome. This obstacle was aridity—the failure of rainfall to meet the demands of agriculture. The impetus of the movement carried its vanguard across the danger-line and into the territory where existence could not be maintained without resource to methods then little understood, and indeed not fully developed. Upon this strange boundary of prosperity, which nature had marked with indelible lines, the hosts engaged in the third colonization era trembled and hesitated for several years, then fell back baffled and disappointed.

The first act in the drama of American settlement ended in the eastern foothills of the Alleghany mountains about 1770; the second, in the neighborhood of the Mississippi river about 1860; the third, midway on the plains of Dakota, Nebraska, Kansas, and Texas about 1890. For each of these historic periods we might find a fit and speaking emblem in its characteristic means of transportation. The emblem of the first would be the little *Mayflower*, tossing on the billows of the Atlantic; that of the second, the heavily laden pack-horse, threading his tortuous way through the tangle of the untrodden forest; that of the third, the prairie schooner, steering for the setting sun across the trackless sea of the plains.

The wonderful drama of American colonization has reserved a fourth and crowning act, for which the scenery is arranged and the actors ready.

CHAPTER III

THE BETTER HALF OF THE UNITED STATES

THE ninety-seventh meridian divides the United States almost exactly into halves. East of that line dwell sixty-four million people. Here are overgrown cities and over-crowded industries. Here is surplus capital, as idle and burdensome as the surplus population. West of that line dwell four or five millions—less than the population of Pennsylvania, and scarcely more than that of Greater New York. And yet the vast territory to the West—so little known, so lightly esteemed, so sparsely peopled—is distinctly the better half of the United States.

The West and East are different sections, not merely in name and geographical location, but in physical endowments and fundamental elements of economic life. Nature wrote upon them, in her own indelible characters, the story of their wide contrasts and the prophecy of their varying civilizations. To the one were given the advantages of earlier development, but for the other were reserved the opportunities of a riper time. It was the destiny of the one to blossom and fruit in an epoch distinguished for the accumulation of wealth, with its vast possibilities of evil and of good. It was the destiny of the other to lie fallow until humanity should feel a nobler impulse; then to nurse, in the shadow of its ever-lasting mountains and the warmth of its unfailing sunshine, new dreams of liberty and equality for men.

That this is not the popular conception of the mission of the Far West may be frankly acknowledged. The region is little known to the great middle-classes in American life. It has been demonstrated by actual statistics that only three per cent. of our people travel more than fifty miles from their homes in the course of a year. Those who make extended pleasure tours gravitate not unnaturally to Europe, drawn by the fascination of quaint foreign scenes and the fame of historic places. But the comparatively few whose business or fancy has taken them across the continent fail, as a rule, to grasp the true significance of the wide empire which stretches from the middle of the great plains to the shores of the Western sea.

It is a common human instinct to regard unfamiliar conditions with distrust. The first settlers in Iowa engaged in desperate rivalry for possession of the wooded lands, thinking that no soil was fit for agricultural purposes unless it furnished the pioneer an opportunity to cut down trees and pull up stumps. "Land that won't grow trees won't grow anything," was the maxim of the knowing ones. Their fathers had cleared the forests on the slopes of the Alleghanies to make way for the plough and the field, and the new generation could not conceive that land which bore rich crops of wild grasses and lay plastic and level for the husbandman to begin his labors, could have any value. A great deal of hard work was wasted before it was discovered that nature had provided new and superior conditions in the land beyond the Mississippi.

So it generally happens that the casual Western traveller, looking at the country from car-windows in the intervals between his daily paper, brings back more contempt than admiration for the economic possibilities of the country. One must live in the Far West to begin to comprehend it. Not only so, but he must come with eager eyes from an older civilization, and he must study the beginnings of industrial and social institutions throughout the region as a whole, to have any adequate appreciation of the real potentialities of that half of the United States which has been reserved for the theatre of twentieth-century developments. To all other observers the new West is a sealed book.

The West is divided from the East by a boundary-line which is not imaginary. It is a plain mark on the face of the earth, and no man made it. It is the place where the region of assured rainfall ends and the arid region begins. There have formerly been some costly doubts about the precise location of this line, but these have been dispelled by experience, and the lesson learned in hardship and impressed by disaster is learned for all time. The momentous boundary-line is that of the ninety-seventh meridian, which cleaves in twain the Dakotas, Nebraska, Kansas, Oklahoma, and Texas. East of this line there is a rainfall which is accepted as reliable, though there are alternate disasters of drought and flood, varying in their effects from short crops to total failures.

Even in humid regions nothing is so uncertain as the time and amount of the rainfall. In the whole range of modern industry nothing is so crude, uncalculating, and unscientific as the childlike dependence on the mood of the clouds for the moisture essential to the production of the staple necessities of life.

The distinguishing characteristic of the vast region west of the ninety-seventh meridian is, then, its aridity—the lack of rainfall sufficient to insure the success of agriculture. The new empire includes, in whole or in part, seventeen States and Territories. It is a region of magnificent dimensions. From north to south it measures as far as from Montreal to Mobile. From east to west the distance is greater than from Boston to Omaha. Within these wide boundaries there are great diversities of climate and soil, of altitude and other physical conditions.

The arid region was the latest acquisition of national territory, except Alaska, until the late war with Spain. It was unknown and undisputed as late as the Revolution. It was the fruit of James Monroe's negotiations with Napoleon I., resulting in the Louisiana purchase; of the forcible conquest from Mexico; of the annexation of Texas, and of the Gadsden purchase in 1853. Unlike the rich and well-watered lands in the valley and around the mouth of the Mississippi, the acquisition of the arid region was not compelled by the irresistible pressure of the frontiersmen. It came as a perquisite with the purchase of Louisiana, and as a concession to manifest destiny. Between the day of its acquisition by the United States and the dawn of its peculiar and enduring civilization, the country was destined to pass through three distinct eras. The first was that of the hunter and trapper; the second, that of the cowboy and the rude miner; the third, that of the railroad, the land-boomer, and the speculative farmer, with mining reduced to a stable industry.

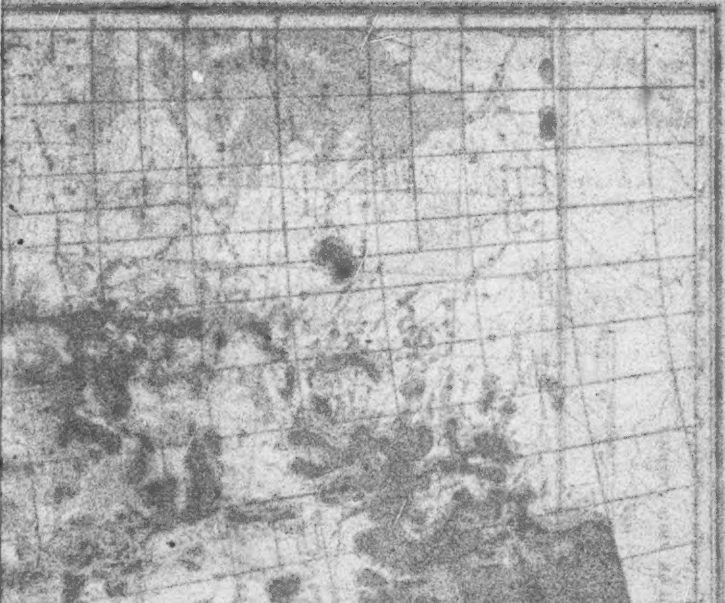
The first exploration of the strange new land of the mysterious West owed its initiative to the public spirit of President Jefferson. He had, indeed, but the vaguest conception of the possible utility of the country, and realised that its development would come long after he should have passed from the stage of events. But he was a patron of science, and felt, moreover, a patriotic curiosity to learn what sort of a property the nation had acquired. Congress cheerfully authorized the expedition which Jefferson proposed. The result was the journey of the famous explorers Lewis and Clark, begun in May, 1804. Starting from St. Louis, they ascended the Missouri river to its sources, crossed the Rocky Mountains in Montana, and followed the Columbia river to its outlet in the Pacific Ocean. When they returned and presented their report, the public obtained its first glimmering of knowledge concerning the geology, climate, and animal and human life of the Far West. The subject was then one of remote interest to the nation, which had scarcely acquired its foothold, through actual settlement, on the northwestern Territories between the Alleghanies and the Mississippi.

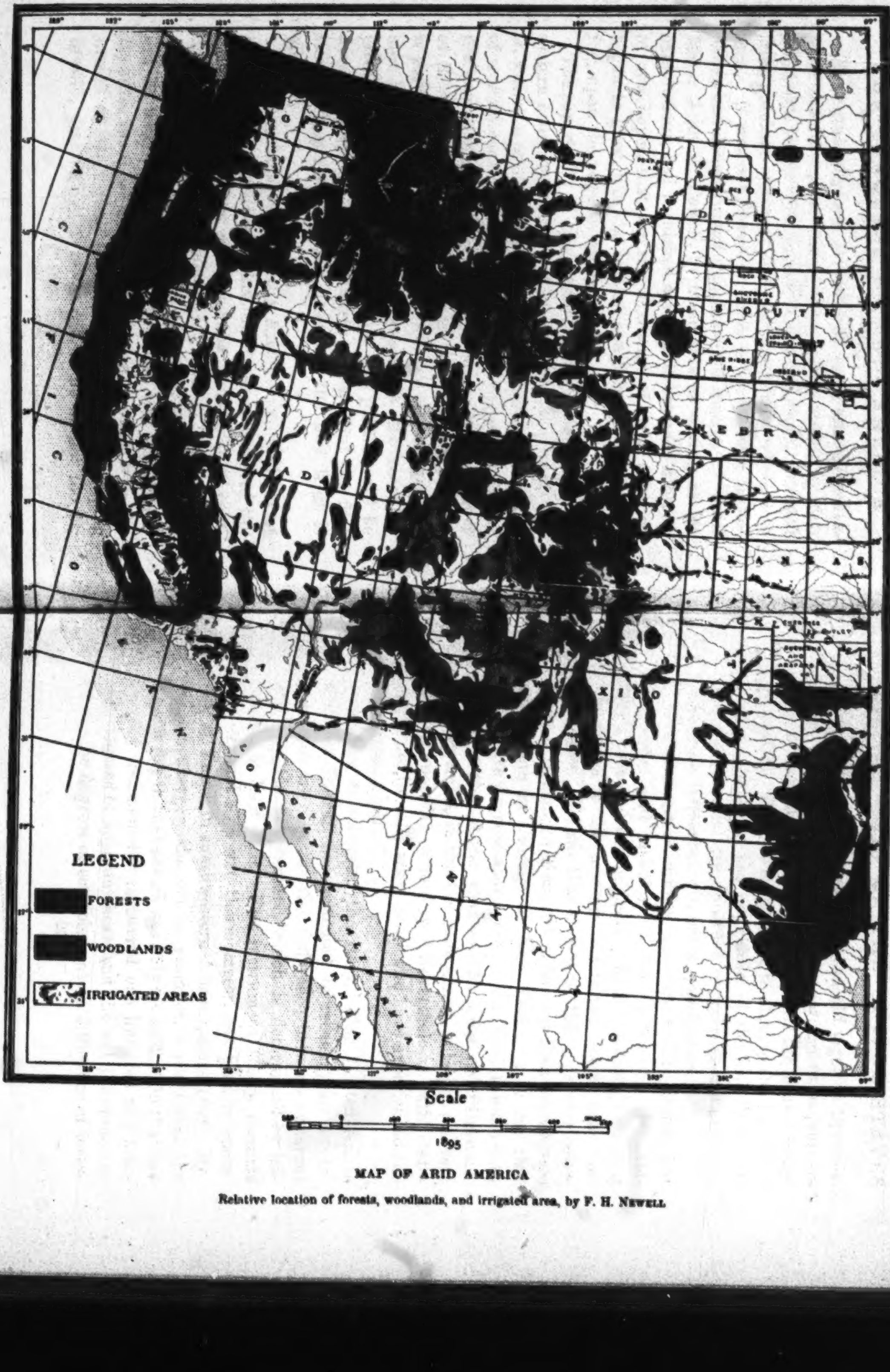
The second notable explorations were those of Zebulon Pike, which developed a superficial knowledge of Colorado and Mexico. Then came Bonneville, Frémont, and their contemporaries and successors, with adventurous settlers and hardy gold-hunters treading close upon their heels, and effecting little substantial development for decades. Francis Parkman, fresh from college, roamed through the country as far as the Black Hills and old Fort Laramie in 1847–8, and left a lively account of the savage wilderness in *The Oregon Trail.*

Thus gradually, and attended by many misrepresentations and strange misconceptions, which inevitably scattered wide the seeds of prejudice, the arid region emerged from absolute obscurity and stood partially revealed to men. It was not, however, until a few pioneer settlements had demonstrated undreamed-of results, nor until Major John W. Powell, by utterances as daring as his explorations, had furnished a scientific basis for a brood of new hopes, that the real character of Arid America began to glow, like the belated sun through a morning fog, upon the popular imagination.

The superiority of the western half-continent over its eastern counterpart may not be expressed in a word. It is, rather, a matter for patient unfolding through a study of natural conditions over wide areas, and a scrutiny of the human institutions which are the inevitable product of this environment. Aridity, in the elementary sense, is purely an affair of climate. That it is also the germ of new industrial and social systems, with far-reaching possibilities in the fields of ethics and politics, will be demonstrated further on in these pages. But the first item of importance in the assets of the new West is climate.

When an inhabitant of the Atlantic seaboard, or of the shores of the Great Lakes, or of the lowlands of the South, can no longer withstand the penetration of cold, damp winds, or the malarious breath of swamps, his family physician sends him to the arid West. Throughout its length and breadth it is one vast sanitarium. Its pure, sweet air and sunny skies are instinct with the breath of life. They put new heart into the drooping invalid, prolonging his life, and, if he be not too far




LEGEND
FORESTS
WOODLANDS
IRRIGATED AREAS
NORTH DAKOTA
SOUTH DAKOTA
NEBRASKA
KANSAS
PACIFIC OCEAN
GULF OF CALIFORNIA
LOWER CALIFORNIA
Scale
1895

MAP OF ARID AMERICA

Relative location of forests, woodlands, and irrigated area, by F. H. Newell

gone at the outset, restoring the old vigor to the shattered body. The faces of the permanent sojourners within their influence they paint with the brown badge of health. It is too early as yet to observe the full effect of the climate on the population of the arid West, but sufficient results are apparent to warrant the assertion that these influences will breed a great race.

The element of aridity not only fosters health, but moderates and makes more readily bearable the summer's heat and winter's cold. It is the damp cold that penetrates to the marrow. It is the humid heat that prostrates. To say that a cold of thirty degrees below zero at Helena, in Montana, is felt less than ten degrees above zero in Chicago or New York; or to say that eighty-five degrees above zero in the East is more dangerous to the laborer than one hundred and fifteen degrees at Indio, in the Colorado desert, is to put a severe tax on popular credulity. Nevertheless, both statements are literally true, as all who have experienced the conditions testify.

Science corroborates the story. The United States Weather Bureau has perfected in recent years an instrument to measure the difference between apparent and sensible temperature, which is determined by humidity, or lack of it. The instrument, which consists of a dry and of a wet thermometer, has been in operation at Yuma, in southwestern Arizona, since 1888. Mr. A. Ashenberger, the official observer, reports that the hottest day in that period was July 20, 1892. On that day the dry thermometer registered one hundred and fourteen degrees of apparent heat, and the wet thermometer sixty-nine degrees of sensible heat—a difference of forty-three degrees. The scientific findings are borne out by the every-day testimony of individuals. Sun-strokes in the arid region are practically unknown. The rainless air that sweeps over the arid lands of western America is necessarily dry. It neither breeds diseases nor carries their germs. It is the very breath of health. The lack of moisture, combined with the configuration, forbids the presence of tornadoes, and the Weather Bureau has absolutely no record of such a calamity west of the ninety-seventh meridian.

The superior climate of the arid West is due to fundamental conditions which differ widely from those of eastern America. Viewed from the stand-point of the broader climatic effects, the eastern half of the United States is one wide plain. The moisture-laden winds from lakes and gulf, as from the great ocean itself, meet none but insignificant barriers. But in the Far West the mountains are the supreme factor in the making of the climate. The coast range stands eternal guard along the margin of the sea, while a little farther inland the Sierra Nevada lifts its giant peaks to intercept the clouds which escape the outer barrier and to condense their moisture into snow. Down the centre of the continent, from Canada to Mexico, the Rocky Mountains tower far into the sky, repeating upon the eastern edge of the arid region the process of condensing and storing the winter's rain and holding it against the summer's need. Between the three great primary ranges scores of shorter ones, or isolated mountain groups, reach their long arms into the desert. The dryness, purity, and lightness of the atmosphere are due to this mountain topography, and to the high average altitude throughout the region. It is, then, in the striking character of its climate, springing from these fixed and fundamental conditions, that the great West scores its first superiority over the well-settled states east of the Mississippi river.

But the nation's sanitarium is also the nation's treasure-house. Without the store of precious metals which sleeps in the bosom of the western mountains the American people would be practically dependent on foreign lands for their supply of gold and silver. From this pitiable plight the nation was saved by the wise statesmanship and the great good fortune which brought into the Union the States of Colorado, Utah, and California, of Idaho, Montana, and Nevada, of Washington, Oregon, and Wyoming, and the Territories of New Mexico and Arizona. European nations testify their appreciation of such resources by struggling for the possession of South Africa, a mineral field scarcely worthy to be mentioned in comparison with that of our own great West.

The western half-continent is rich not merely in the precious metals, but in all the raw materials of economic greatness. Its supreme advantage consists in the extraordinary diversity of its resources. In sketching the peculiarities of the several Western States, further on in these pages, the facts will be stated with more detail. In directing attention to the general superiority of these States over their sisters of the East, it is sufficient now to say that they have more water-power than New England; more coal, iron, and oil than Pennsylvania; larger and better forests than Maine and Michigan; and produce better wheat and corn than Illinois and Indiana. The time is rapidly coming when they will produce more and better sugar than Louisiana, and will revolutionize the tanning industry by supplanting oak and hemlock bark with canaigre. With beef and mutton, wool and hides, they already feed and clothe the East. They have finer harbors than Boston and New York, and a sea-coast which faces a greater foreign world.

There is no Eastern State that compares with almost any one of these giant commonwealths of the comparatively unknown West in anything save present development, which includes, of course, population, wealth, and political influence. So emphatic and unmistakable is the superiority with which nature endowed the Far West that it may be said in all seriousness that if the Pilgrim Fathers had landed at San Diego rather than at Plymouth, that half of the country which now contains over ninety per cent. of the total population would be regarded as comparatively worthless. It would have been difficult to settle it to the best advantage. To illustrate: imagine the excitement which would occur if the people of New England should awaken some morning to find themselves in possession of the climate and diversified resources of Colorado, Washington, or California! Even the sane brain which rules the land of steady habits would grow dizzy in the presence of such vast possibilities. And yet Colorado, Washington, and California represent but a small proportion of the country which rests under the wide arch of our western sky.

In briefly reviewing the salient points of difference between the old section and the new, the feature which constitutes at once the most characteristic and the most fundamental advantage of the West has been left for separate treatment. Not until this feature has been considered is it possible to appreciate the striking character of the new civilization which will rule the destinies of the western half of the continent, and, very probably, project new and potent influences into the social and political life of the United States as a whole.

CHAPTER IV

THE BLESSING OF ARIDITY

FORTUNATE beyond all other parts of the United States in its climate and in the surpassing wealth of its forests, its quarries and its mines, western America is yet more favored in another element of its physical foundation. This is the substantial aridity which prevails throughout its vast proportions.

The anomaly that its foremost blessing should consist in the fact which gave it a wide-spread reputation for worthlessness is interesting, but unimportant. Nature frequently conceals her raw materials of greatness, alike in men and in countries, until time and opportunity are ripe. In the aridity of the West we shall find the true key to its future institutions. Climate may produce a healthy race, and mineral resources may enrich it, but the natural conditions which determine the character of social and industrial organization, and mould the habits and customs of men, are the potent influences which shape civilization. Hence we shall see that in any just estimate of the relative worth of western resources the fact of aridity must be rated as high above the value of forests and mines as human progress is dearer than money, and as the fate of the race is more momentous than the prosperity of individuals.

The influence of the new environment may readily be illustrated by comparing the conditions which confronted the early settlers of the New England forests and the Illinois prairie, on one hand, and, upon the other, those which the settler met in the deserts around Salt Lake. Except for the temporary need of defence against the Indians, eastern settlers were able to locate their homes without reference to neighbors. They cleared the forest or turned the prairie sod, and were ready to begin. They generally took all the land they could claim under the law, and held much of it out of use for speculation. The greed for land resulted in large farms, and this involved social isolation. The individual acted alone and exclusively for his own benefit. The conditions not only favored, but practically compelled it. Out of this primal germ of our eastern citizenship grew the plant of individual enterprise, which is the conspicuous product of the time. The fruit which it bore was competition, and this has latterly tended towards monopoly.

The conditions which confronted the settler in the deserts of Utah were widely different. There he could not build his home and make his living regardless of his neighbor. Without water to irrigate the rich but arid soil he could not raise a spear of grass nor an ear of corn. Water for irrigation could only be obtained by turning the course of a stream and building canals which must sometimes be cut into the solid walls of the canyon or conducted across chasms in flumes. All this lay beyond the reach of the individual. Thus it was found that the association and organization of men were the price of life and prosperity in the arid West. The alternative was starvation. The plant which grew from this new seed was associative enterprise, and we shall presently see what flower it bore in Utah and other States of the arid region. But it is interesting to first observe that we have encountered in these underlying conditions of the western half-continent principles that are as old as history and as wide as humanity.

The founders of the wonderful civilization of the Netherlands were compelled to deal with conditions which brought into action the same forces as those which are working out interesting results in the arid region of the United States. The Dutch combined and organized their efforts in order to keep the water off their lands, as the Westerners combine and organize to bring the water on. Writing of this aspect of his subject in that enlightening book, *The Puritan in Holland, England, and America*, Mr. Douglass Campbell says:

"The constant struggle for existence, as in all cases when the rewards are great enough to raise men above biting, sordid penury, strengthens the whole race, mentally, morally, and physically. *Labor here has never been selfish and individual. To be effective, it requires organization and direction.* Men learn to work in a body and under leaders. A single man laboring on a dike would accomplish nothing; the whole population must turn out and act together."

Even more interesting and significant is Mr. Campbell's statement of the far-reaching influence, upon the whole economic fabric of the nation, of the co-operative methods taught the founders of Holland by the necessities of their situation and transmitted to their descendants. He says:

"The habits thus engendered extend in all directions.

Everything is done in corporations" [co-operations?]. "Each trade has its guild, elects its own officers, and manages its own affairs. The people are a vast civic army, subdivided into brigades, regiments, and companies, all accustomed to discipline, learning the first great lesson of life—obedience."

Professor E. W. Hilgard, the distinguished director of the agricultural department of the University of California, has brought this line of reasoning from physical causes to industrial effects into direct application to our subject. In a notable contribution to the *Popular Science Monthly* he says:

"As irrigation means heavy investments of capital or labor, hence the co-operation of many and the construction of permanent works: it necessarily implies the correlative existence of a stable social organization, with protection for property rights, and (in view of the complexity of the problem of proper and equitable distribution of water) a rather advanced appreciation of the need and advantages of co-operative organization."

It was in the course of an effort to account for the singular preference of the founders of the most ancient civilizations for arid lands, rather than for the forested areas which have been the scenes of later development, that Professor Hilgard made this expression of the obvious effects of irrigation on industrial polity. A little further on we shall see other interesting results of his inquiry in this field.

The quality of aridity is thus the most significant among many striking contrasts which mark the western half of the United States—the field for future settlement and development—as fundamentally different from the eastern half. Its relation to agriculture is important and interesting, but its relation to a future civilization in a broader sense will be momentous. It is, indeed, a fateful crop, trembling with the hopes of humanity, that is beginning to sprout from the arid soil of the far-western deserts.

The blessing of aridity is again conspicuously illustrated in its remarkable effect upon the soil. The land which the casual traveller, speaking out of the splendid depths of his ignorance and prejudice, condemns as "worthless" and fit only "to hold the earth together," is in reality rich and durable beyond the most favored districts in the humid regions. It is the marvel of every eastern farmer who comes in contact with it. Professor Hilgard sees in this phenomenal fertility the most reasonable explanation of the choice of arid lands by the people foremost in ancient civilization.

It has puzzled the historian to account for the fact that the glories of antiquity sprang from the heart of the desert. The fact itself is, of course, beyond dispute. Egypt, Asia Minor, and Syria, with Palestine, "the land of milk and honey"; Persia, Arabia, and the classic lands of northern India, as well as the countries of the Carthaginians and the Moors, were arid regions. So also were the chosen homes of the Incas in South America, and of the Aztecs and Toltecs in Mexico and our own Southwest, the fame of whose vanished civilizations is reflected in the pages of Prescott and Baldwin. For aught we know to the contrary, these departed nations may have been perfect types of the co-operative commonwealth, and the knack of governing them for the equal benefit of all may be the most precious of the lost arts. Among the silent witnesses which have survived the centuries to testify to the engineering skill and the perfection of social organization of those who were swept into oblivion by nameless calamities, are great irrigation canals, portions of which are even yet so true and substantial as to serve the uses of to-day in conjunction with modern works. There are such instances in Arizona.

The accepted explanation of the choice of the arid land by the ancient races is that they sought security against savage enemies, both animal and human, which infested the forest. The theory is purely sentimental and quite inconsistent with the slight but conclusive evidences of their superior intelligence and courage which yet survive. The reasonable explanation of the mystery of ancient civilization is that the arid lands were chosen because they were infinitely better than the humid lands, and because they presented conditions much better suited to the industrial polity of the people and the age.

In searching for the clue of this mystery Professor Hilgard has developed facts which tend to upset other accepted theories. It has long been conceded that certain arid districts are the richest spots on the surface of the globe. "The valley of the Nile," for instance, is a phrase which is everywhere taken as a synonym of extraordinary fertility. The richness and durability of the Nile lands, which have supported for centuries an average population of little more than one and one-half persons to each acre of cultivated soil (a density of settlement which would give Texas a population of over one hundred and sixty millions), has been ascribed to the fertilizing quality of the annual deposit of river sediment. The partisans of irrigation have made much of this aspect of the matter, asserting that the artificial application of water is itself a means of fertilization. They have asserted the claim not only where the source of supply, as in the cases of the Rio Grande and the Rio Colorado, is obviously heavily charged with silt held in suspension, but with almost equal ardor in cases where the water flows, a stream of limpid crystal, directly from the mountain-side, or gushes impetuously from the earth in artesian outpourings.

That the famous river Nile does, indeed, leave a thin deposit of rich soil upon each subsidence of its annual flood our California scientist does not, of course, deny. He proves, however, that this layer of new soil is only of the thickness of common cardboard—one-twenty-fifth of an inch—and is equal to only about two good two-horse loads per acre. Three times as much stable manure is the usual dressing for an acre. He truly observes that as the sediment is merely rich soil, thousands of farmers could readily haul and spread such fertilizer upon their land, and would doubtless do so if they could thereby duplicate the phenomenal fertility of the Nile country. He clinches his argument by showing that the neighboring province of Fayoom, in the Libyan Desert, shares the perpetual fertility of the Nile district, though irrigated only with the clear waters of Lake Moeris; that the regur lands of the Deccan, in south-central India, have been phenomenally productive for thousands of years, and that the loess region of China, drained by the headwaters of the Yellow river, have been the granary of China for ages. Like the famous Egyptian provinces, the lands referred to in India and China are arid or semi-arid, and, unlike the Nile Valley, they have not been enriched by sedimentry deposits or fertilized by irrigation.

Hence, Professor Hilgard reaches the somewhat sensational conclusion that the extraordinary fertility which, by world-wide acknowledgment, marks the valley of the Nile, is a *quality inherent in aridity itself*. And he maintains his contention thus:

"Soils are formed from rocks by the physical and chemical agencies commonly comprehended in the term *weathering*, which includes both their pulverization and chemical decomposition by atmospheric action. Both actions, but more especially the chemical one, continue in the soil itself; the last named in an accelerated measure, so as to give rise to the farmer's practice of 'fallowing'—that is, leaving the land exposed to the action of the air in a well-tilled but unplanted condition, with a view to increasing the succeeding year's crop by the additional amount of plant-food rendered available, during the fallow, from the soil itself.

"This weathering process is accompanied by the formation of new compounds out of the minerals originally composing the rock. Some of these, such as zeolites and clay, are insoluble in water, and therefore remain in the soil, forming a reserve of plant-food that may be drawn upon gradually by plants; while another portion, containing especially the compounds of the alkalies—potash and soda—are easily soluble in water. Where the rainfall is abundant these soluble substances are currently carried into the country drainage, and through the rivers into the ocean. Among these are potash, lime, magnesia, sulphuric and a trifle of phosphoric acids. Where, on the contrary, the rainfall is insufficient to carry the soluble compounds formed in the weathering of the soil-mass into the country drainage, those compounds must of necessity remain and accumulate in the soil."

All this is perfectly comprehensible, even to the lay mind. The valuable ingredients of the soil which are soluble have been washed out of the land in humid regions, like our eastern States, by the rains of centuries. On the other hand, these elements have been accumulating in the arid soil of the West during the same centuries. They lie there now like an inexhaustible bank account on which the plant-life of the future may draw at will without danger of protest. The process which created this rich soil goes on repeating itself—recreating the soil season after season. The same is true, of course, in the arid and semi-arid regions of Egypt, India, China, and all other localities that enjoy the inestimable blessing of aridity.

Professor Hilgard's conclusions are the result of patient investigation. They are based on more than one thousand analyses of the soils of the arid and the humid regions of the United States—of the West and the East. These analyses demonstrated the following astounding fact: That the soils of the arid regions lying west of the one hundredth meridian, when compared with the soils of the humid region lying east of the Mississippi river, contain on the average three times as much potash, six times as much magnesia, and fourteen times as much lime. This is the scientific explanation of the superior productiveness of the arid regions of the

West, which every intelligent observer has noted and marvelled to behold.

The people of the Blue Grass Region of Kentucky and of other favored localities have repeated from generation to generation the boast that "a limestone country is always a rich country." Professor Hilgard has demonstrated that the average arid soil is equal to the most phenomenal soil of the East, while the soil of the arid West as a whole is beyond comparison with that of the humid East as a whole. He coins the maxim, "Arid countries are always rich countries when irrigated," and the phrase does scant justice to the subject. It only remains to add that Professor Hilgard is recognized as the foremost expert on soils in the West, and one of the first men in his profession in the United States. No one will question the weight of his views, for they coincide alike with common-sense and with world-wide experience through the centuries. It cannot, therefore, be doubted that the agricultural foundation of the Far West, as it relates to the soil, is incomparably better than any other part of the continent.

While science has thus furnished a lucid explanation of the universal fertility of arid lands, it would be unfair to draw the conclusion that the claims which have been made concerning the rare fertilizing qualities of certain western rivers are entirely unfounded. Nearly all of the rivers in the West carry more or less rich silt, due to the fact that they flow through treeless regions, where the soil is swept into the stream by winds and sudden torrents. Eastern rivers are, as a rule, much clearer, because they flow through forests and cultivated fields. The waters of the Colorado river gather an enormous quantity of fertilizing matter in their long journey from the mountains of Wyoming to the Gulf of California. There is no guesswork in this instance. The scientific men of the University of Arizona, at Tucson, have made patient experiments, extending over many months of time, to determine the actual commercial value ofthe fertilizer contained in these waters and precipitated on the land in the process of irrigation. Basing their computation upon the use of thirty-six acre-inches of this water, they find that the fertilizing material so applied would cost, if purchased in the market, the sum of nine dollars and seven cents per acre. Where such conditions prevail cultivation can never impoverish, but actually enriches, the fortunate soil. But we have yet to mention the chief blessing of aridity. This is the fact that it compels the use of irrigation.

And irrigation is a miracle!

CHAPTER V

THE MIRACLE OF IRRIGATION

THE beauty of Damascus is the theme of poets. Speaking of this ancient capital an anonymous writer remarks that "the cause of its importance as a city in all the ages is easily seen as you approach it from the south. Miles before you see the mosques of the modern city the fountains of a copious and perennial stream spring from among the rocks and brushwood at the base of the Anti-Lebanon, creating a wide area about them, rich with prolific vegetation." He continues:

"These are the 'streams of Lebanon,' which are poetically spoken of in the Songs of Solomon, and the 'rivers of Damascus,' which Naaman, not unnaturally, preferred to all the 'waters of Israel.' This stream, with its many branches, is the inestimable treasure of Damascus. While the desert is a fortification round Damascus, the river, where the habitations of men must always have been gathered, as along the Nile, is its life.

"The city, which is situated in a wilderness of gardens of flowers and fruits, has rushing through its streets the limpid and refreshing current; nearly every dwelling has its fountain, and at night the lights are seen flashing on the waters that dash along from their mountain home. As you first view the city from one of the overhanging ridges you are prepared to excuse the Mohammedans for calling it the earthly paradise. Around the marble minarets, the glittering domes, and the white buildings, shining with ivory softness, a maze of bloom and fruitage—where olive and pomegranate, orange and apricot, plum and walnut, mingle their varied tints of green—is presented to the sight, in striking contrast to the miles of barren desert over which you have just ridden."

This is the miracle of irrigation in the Syrian desert. It is no more miraculous in that far-eastern country than in our own West. Nor is Damascus more beautiful than Denver, Salt Lake City, or than any one of a score of modern towns in California. But because Damascus is ancient and historic, and looks down on mankind from the biblical past, it possesses a degree of interest with which it is difficult to invest much better and more important places of our own country and our own time. It is well, then, to remember that not only the beauty of Damascus, but the glories of the Garden of Eden itself, were products of irrigation. "A river went out of Eden to water the Garden," says the Bible story.

No consideration of the subject can be appreciative when it starts with the narrow view that irrigation is merely an adjunct to agriculture. It is a social and industrial factor, in a much broader sense. It not only makes it possible for a civilization to rise and flourish in the midst of desolate wastes; it shapes and colors that civilization after its own peculiar design. It is not merely the life-blood of the field, but the source of institutions. These wider and more subtle influences are difficult to define in abstract terms, but we may trace them clearly through the history of various communities which have grown up in conformity with these conditions.

The essence of the industrial life which springs from irrigation is its democracy. The first great law which irrigation lays down is this: There shall be no monopoly of land. This edict it enforces by the remorseless operation of its own economy. Canals must be built before water can be conducted upon the land. This entails expense, either of money or of labor. What is expensive cannot be had for naught. Where water is the foundation of prosperity it becomes a precious thing, to be neither cheaply acquired not wantonly wasted. Like a city's provisions in a siege, it is a thing to be carefully husbanded, to be fairly distributed according to men's needs, to be wisely expended by those who receive it. For these reasons men cannot acquire as much irrigated land, even from the public domain, as they could acquire where irrigation was unnecessary. It is not only more difficult to acquire in large bodies, but yet more difficult to retain. A large farm under irrigation is a misfortune; a great farm, a calamity. Only the small farm pays. But this small farm blesses its proprietor with industrial independence and crowns him with social equality. That is democracy.

Industrial independence is, in simplest terms, the guarantee of subsistence from one's own labors. It is the ability to earn a living under conditions which admit of the smallest possible element of doubt with the least possible dependence upon others. Irrigation fully satisfies this definition.

The canal is an insurance policy against loss of crops by drought, while aridity is a substantial guarantee against injury by flood. Of all the advantages of irrigation, this is the most obvious. Scarcely less so, however, is its compelling power in the matter of production. Probably there is no spot of land in the United States where the average crop raised by dependence upon rainfall might not be doubled by intelligent irrigation. The rich soils of the arid region produce from four to ten times as largely with irrigation as the soil of the humid region without it. As the measure of value is not area, but productive capacity, twenty acres in the Far West should equal one hundred acres elsewhere. Such is the actual fact.

A little further on we shall see that not merely the quantity of crops, but their quality as well, responds to the influence of irrigation. We shall see how this art favors the production of the wide diversity of products required for a generous living. Certainty, abundance, variety—all this upon an area so small as to be within the control of a single family through its own labor—are the elements which compose industrial independence under irrigation. The conditions which prevail where irrigation is not necessary—large farms, hired labor, a strong tendency to the single crop—are here reversed. Intensive cultivation and diversified production are inseparably related to irrigation. These constitute a system of industry the fruit of which is a class of small landed proprietors resting upon a foundation of economic independence.

This is the miracle of irrigation on its industrial side.

As a factor in the social life of the civilization it creates, irrigation is no less influential and beneficent. Compared with the familiar conditions of country life which we have known in the East and central West, the change which irrigation brings amounts to a revolution. The bane of rural life is its loneliness. Even food, shelter, and provision for old age do not furnish protection against social discontent where the conditions deny the advantages which flow from human association. Better a servant in the town than a proprietor in the country!—such has been the verdict of recent generations who have grown up on the farm and left it to seek satisfaction for their social instincts in the life of the town. The starvation of the soul is almost as real as the starvation of the body.

Irrigation compels the adoption of the small-farm unit. This is the germ of new social possibilities, and we shall see to what extent they have already been realized as we proceed. During the first and second eras of colonization in this country the favorite size for a farm was about four hundred acres, of which from a fourth to a half was gradually cleared and the rest retained in woodland. The Mississippi Valley was settled mostly in quarter-sections, containing one hundred and sixty acres each. The productive capacity of land is so largely increased by irrigation, and the amount which one family can cultivate by its own labor consequently so much reduced, that the small-farm unit is a practical necessity in the arid region.

Where settlement has been carried out upon the most enlightened lines irrigated farms range from five to twenty acres upon the average, rarely exceeding forty acres at the maximum. It is perfectly obvious, of course, that a twenty-acre unit means that neighbors will be eight times as numerous as in a country settled up in quarter-sections—that where farms are ten acres in size neighbors will be multiplied by sixteen. Thus in its most elementary aspect the society of the arid region differs materially from that of a country of large farms. Eight or sixteen families upon a quarter-section are much better than no neighbors at all, but irrigation goes further than this in revolutionizing the social side of rural life.

A very-small-farm unit makes it possible for those who till the soil to live in the town. The farm village, or home centre, is a well-established feature of life in Arid America, and a feature which is destined to enjoy wide and rapid extension. Each four or five thousand acres of cultivated land will sustain a thrifty and beautiful hamlet, where all the people may live close together and enjoy most of the social and educational advantages within the reach of the best eastern town. Their children will have kindergartens as well as schools, and public libraries and reading-rooms as well as churches. The farm village, lighted by electricity, furnished with domestic water through pipes, served with free postal delivery, and supplied with its own daily newspapers at morning and evening, has already been realized in Arid America. The great cities of the western valleys will not be cities in the old sense, but a long series of beautiful villages, connected by lines of electric motors, which will move their products and people from place to place. In this scene of intensely cultivated land, rich with its bloom and fruitage, with its spires and roofs, and with its carpets of green and gold stretching away to the mountains, it will be difficult for the beholder to say where the town ends and the country begins.

This is the miracle of irrigation upon its social side.

Irrigation is the foundation of truly scientific agriculture. Tilling the soil by dependence upon rainfall is, by comparison, like a stage-coach to the railroad, like the tallow dip to the electric light. The perfect conditions for scientific agriculture would be presented by a place where it never rained, but where a system of irrigation furnished a never-failing water supply which could be adjusted to the varying needs of different plants. It is difficult for those who have been in the habit of thinking of irrigation as merely a substitute for rain to grasp the truth that precisely the contrary is the case. Rain is the poor dependence of those who cannot obtain the advantages of irrigation. The western farmer who has learned to irrigate thinks it would be quite as illogical for him to leave the watering of his potato-patch to the caprice of the clouds as for the housewife to defer her wash-day until she could catch rain-water in her tubs.

The supreme advantage of irrigation consists not more in the fact that it assures moisture regardless of the weather than in the fact that it makes it possible to apply that moisture just when and just where it is needed. For instance, on some cloudless day the strawberry-patch looks thirsty and cries for water through the unmistakable language of its leaves. In the Atlantic States it probably would not rain that day, such is the perversity of nature, but if it did it would rain alike on the just and unjust—on the strawberries, which would be benefited by it, and on the sugar-beets, which crave only the uninterrupted sunshine that they may pack their tiny cells with saccharine matter. In the arid region there is practically no rain during the growing season. Thus the scientific farmer sends the water from his canal through the little furrows which divide the lines of strawberry plants, but permits the water to go singing past his field of beets.

Plants and trees require moisture as well as sunshine and soil, and for three reasons: first, that the tiny roots may extract the chemical qualities from the soil; then, that there may be sap and juice; finally, that there may be moisture to evaporate or transpire from the leaves. But while all plant-life requires moisture, all kinds of it do not require the same amount, nor do they desire to receive it at the same time and in the same manner. Just as the skilful teacher studies the individualities of fifty different boys, endeavoring to discover how he may most wisely vary his methods to obtain the best results from each, so the scientific farmer studies his fifty different plants or trees and adjusts his artificial "rainfall" in the way which will produce the highest outcome. With the aid of colleges, experimental farms, and county institutes, wonderful progress has been made along these lines in recent years. This progress will continue until the agriculture and horticulture practised on the little farms of Arid America shall match the marvellous results won by research and inventive genius in every other field of human endeavor.

This is the miracle of irrigation upon its scientific side.*

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* For full explanation of practical methods of irrigation, see Appendix.

Part Second

REAL UTOPIAS OF THE ARID WEST

"At every new stage of the history of the American settlement, we are afresh reminded that colonies are planted by the uneasy. The discontent that comes from poverty and financial reverse, that which is born of political unrest, and that which has no other cause than feverish thirst for novelty and hazardous adventure, had each a share in impelling Englishmen to emigrate. But in the seventeenth century religion was the dominant concern—one might almost say the dominant passion—of the English race, and it supplied much the most efficient motive to colonization. Not only did it propel men to America, but it acted as a distributing force on this side of the sea, producing secondary colonies by expelling from a new plantation the discontented and the persecuted to make fresh breaks in the wilderness for new settlements."—EDWARD EGGLESTON, *Beginners of a Nation.*

CHAPTER I

THE MORMON COMMONWEALTH

To study the human side of things in the arid region of the Far West, we must begin with the Mormon Commonwealth of Utah. This is true for a number of excellent reasons. We find here the earliest development of any consequence. Although irrigation is older than history, it was never practised upon any considerable scale by Anglo-Saxons until the Mormon pioneers turned the waters of City Creek upon the alkaline soil of Salt Lake Valley in the summer of 1847.

In Utah, almost alone of the far-western States, settlement began with home-making pure and simple. Irrigation was the primal and single industry until a commonwealth had been established. In California, in Colorado, in Nevada, in Idaho, and in Montana, mining, rather than agriculture, was the motive which induced the original settlement by Americans, and irrigation grew up only as an adjunct to the mining camp. In Wyoming, and in a less degree elsewhere, stock-raising was the first pursuit and irrigation was used merely to flood the bottom land and grow crops of coarse, wild hay for the winter feeding of cattle. In Washington and Oregon the first settlements were made along the humid coast region, and the arid parts of those States were settled, in such measure as they have been settled at all, by the overflow of those original currents of population. But in Utah the motive was home-building, and the pursuit was agriculture for its own sake.

Furthermore, we find in Utah, and nowhere else, an entire and distinct people, who have grown up under one strong and simple industrial system, and have brought that system to its logical results. This experience covers half a century, and cannot be objected to on the ground that it is an experiment, the results of which remain to be demonstrated.

Finally, partly because of these several reasons and partly because the Mormon fugitives possessed no capital except their leader's brains and their own hard hands, the economic institutions of Utah are the natural outgrowth of the conditions of an arid land. Utah is the product of its environment. As we study it we shall see the economic tendencies underlying and shaping the industrial life of all communities which find their life-current in the irrigation canal and are surrounded by the rich and varied, but wholly undeveloped, resources of our far-western country. It is for these reasons that the Mormon Commonwealth suggests itself irresistibly as the starting-point of any proper study of our subject.

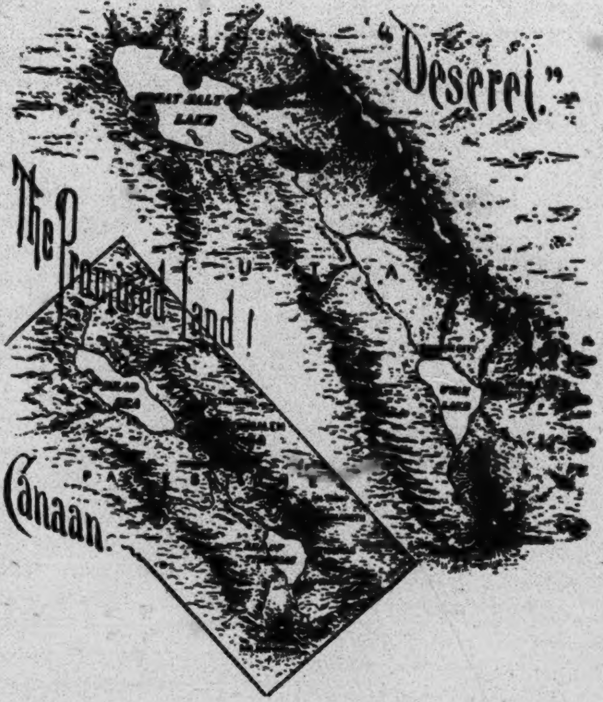
What did the pioneers have to start with? What have they accomplished in fifty years? How did they do it? In the answers to these questions we may find a flood of light for the future of the West, but only upon condition that the answers be sought in a spirit of perfect candor and without prejudice either in favor of or against the interesting people of the Utah mountains.

On July 24, 1847, the Mormon caravan emerged from the mouth of Emigration Canyon into the valley of the Great Salt Lake. It was a beautiful picture that greeted the eyes of the fugitives as they rested here to enjoy the shade of the cottonwoods and listen to the music of the mountain torrent and the birds. Out of the chill air of the higher altitudes, out of the dark shadows of the picturesque chasm, they had come by a sudden turn face to face with a broad, sunlit valley, which sloped gently away to the shore of an inland sea. On the east, the Wasatch mountains reared their brown and rifted barriers until their summits were lost in a crown of eternal snows. To the south and west the Oquirrhs marshalled their peaks into the waters of the lake. Below them, valley and lake; around them on every side, mountains and more mountains; over them, the impalpable sky—this was the vision which burst suddenly upon the tired eyes of the pilgrims.

When they had proceeded a little farther they caught sight of a large fresh lake some miles to the south, emptying its surplus waters into an inland sea through a slender river, which shone like a ribbon of silver. The comparison suggested by these strange conditions might have occurred to a duller mind than that of Brigham Young, who felt that he was a Moses leading a new tribe of Israel to a new promised land. The fresh lake was the sea of Tiberius; the salt one, the Dead Sea; the river was, of course, the Jordan. This, then, was the new Palestine, and here the leader and his followers would build the new Jerusalem! Advancing a few miles into the valley, and halting near the banks of a roaring brook, Brigham Young struck his staff upon the ground and exclaimed, "Here we will rear our temple in holiness to the Lord." It is above this spot that Sculptor Dallin's graceful figure of the Angel Moroni now looks down from a stately pile of Utah granite, reared at a cost of forty years' labor and six million dollars.

The pioneers possessed very little cash capital when they arrived in the valley which was to be the heart of a future commonwealth. This was not a serious misfortune, since there was little that money would buy in Utah at that time, or anywhere within one thousand miles east, west, north, or south. They had located at almost the exact geographical centre of that great arid region whose modern agricultural era they were destined to inaugurate. Surrounded by extraordinary wealth, there was but one thing which could pass current as a medium of exchange in this primeval wilderness. This one thing was labor, and the free and unlimited coinage of labor has been the cardinal doctrine in Utah's economic faith from the beginning down to the present hour. Besides their willing industry, the Mormons had brought with them the contents of seventy-two wagons, about one hundred horses, less than half as many mules and oxen, nineteen cows and a few chicken. It was with this capital that they began the making of Utah. But at the very threshold of their life in a new country they were confronted by something utterly strange to them in the conditions of agriculture.

First of the Anglo-Saxon race, the Mormons encountered the problem of aridity, and discovered that its successful solution was the price of existence. Brigham Young had lived in Vermont, Ohio, Missouri, and Illinois. Neither he nor any of his followers had ever seen a country where the rainfall did not suffice for agri-


"Deseret."
The Promised Land!
Canaan.
GREAT SALT LAKE
U T A
DEAD SEA
UTAH LAKE

MAP SHOWING THE STRIKING SIMILARITY BETWEEN PALESTINE AND SALT LAKE VALLEY, UTAH

(By courtesy of the Rio Grande Western R. R.)

culture, nor ever read of one save in the Bible. But they quickly learned that they had staked their whole future upon a region which could not produce a spear of tame grass, an ear of corn, nor a kernel of wheat without skilful irrigation. Of the art of irrigation they were utterly ignorant. But the need of beginning a planting was urgent and pressing, for their slender stock of provisions would not long protect them from starvation.

It was this emergency which produced the first irrigation canal ever built by white men in the United States. Mormons are prone to believe that the suggestion of this work was a revelation from God to the head of the Church. Other traditions ascribe it to the advice of friendly Indians; to the example of the Mexicans; to the shrewd intuition with which the leader had met all the trials encountered in the course of his adventurous pilgrimage. Whatever the source of the inspiration, he quickly set his men at work to divert the waters of City Creek through a rude ditch and to prepare the ground for Utah's first farm. These crystal waters now furnish the domestic supply for a city of sixty thousand inhabitants. The late President Wilford Woodruff, who was one of the party assigned to the work of digging the first canal, related that when the water was turned out upon the desert the soil was so hard that the point of a plough would scarcely penetrate it. There was also much white alkali on the surface. It was, therefore, with no absolute conviction of success that the pioneers planted the very last of their stock of potatoes and awaited the result of the experiment. The crop prospered in spite of all obstacles, and demonstrated that a living could be wrung from the forbidding soil of the desert when men should learn to adapt their industry to the conditions.

Such was the humble beginning of modern agriculture in Arid America. The success of this desperate expedient to preserve the existence of a fugitive people in the vast solitude has made Utah our classic land of irrigation, and given the Mormons their just claim as the pioneer irrigators of the United States. It was not, however, until they survived other hardships, including the devastation of their first crops by swarms of crickets, that the hardy settlers were able to celebrate a genuine harvest-home, and to feel that the ground was at last firm beneath their feet. Then began that long era of material prosperity which will never cease until the people depart from the industrial system established by Brigham Young.

It is this industrial system which makes the Mormons well worthy of study at this time. Nothing just like it exists elsewhere upon any considerable scale, yet its leading principles are certainly capable of general application. Good Mormons regard the system, like all their blessings, as a direct revelation of God. Many others consider it the intellectual product of a great man's brain. But when it is studied in connection with Mormon colonization, it is plain that the system was born of the necessities of the place and time—that it is the legitimate product of the peculiar environment of the arid region. The forces that have made the civilization of Utah will make the civilization of western America. It is in this view of the matter that we shall find our justification for a careful study of the Mormon structure of industry and society.

The economic life of Utah is founded on the general ownership of land. Speaking broadly, all are proprietors, none are tenants. Land monopoly was discountenanced from the beginning. All were encouraged to take so much land as they could apply to a beneficial purpose. None were permitted to secure land merely to hold it out of use for speculation. The corner-stone of the system was industrialism—the theory that all should work for what they were to have, and that all should have what they had worked for. In order to realise this result, it was necessary that each family should own as much land as it could use to advantage, and no more.

The adoption of this principle was plainly due to the peculiar conditions which the leader saw about him. He instantly realised that value resided in water rather than in land; that there was much more land than water; that water could only be conserved and distributed at great expense.

If he had settled in a land of abundant rainfall it is improbable that he would have set such severe limitations upon the amount of land which individuals should acquire. In that case he would, perhaps, have thought it well for his people to take all the land they could possibly obtain under the law, and thus enjoy large speculative possibilities. But if he had pursued this policy in Utah he could not have accommodated the thousands whom he expected to follow him in the early future. He thus found it imperatively necessary to restrict the amount of land which each family should acquire, suiting it to their actual needs. He came from a country which had been settled in farms ranging from two hundred to four hundred acres in size. The reduction in the farm unit which he now proposed must have seemed nothing less than startling to his followers. It is plain that in proposing such an innovation he not only comprehended the social necessities of the situation, but anticipated, with remarkable foresight, the possibilities of intensive agriculture by means of irrigation.

The first settlement which he planned was, of course, Salt Lake City and its neighborhood. This became the model of all future colonies. It was laid out in such a way as to secure an equitable division of land values among all the inhabitants.

The city blocks consist of ten acres each, divided into eight lots of one and a quarter acres. These lots were assigned to professional and business men. Next there was a tier of five-acre lots. These were assigned to mechanics. Then there were tiers of ten-acre and of twenty-acre lots. These went to farmers, according to the size of their families. Under this arrangement every colonist was a small landed proprietor, owning a certain amount of irrigated soil from which he could readily produce the necessities of life. The division of land values was remarkably even, for what one man lacked in area of his possessions he gained in location. The small lots were close to the centre of business; the large lots more remote from that centre. As the place grew in course of years from an emigrants' camp to a populous city, with paved streets, domestic water, electric lights, and railways, the inevitable rise in values was distributed with remarkably even hand. Not a single family or individual failed to share in the great fund of "unearned increment" which arose from increasing population and growing public improvements.

This principle of universal land ownership, and of careful division according to location and of differing needs of various classes, has been followed throughout the Mormon settlements of Utah and surrounding States, and is being duplicated to-day in the latest colonies established by this people.

It is important to note that the Mormon land system rested on individual proprietorship. There never was any attempt at community ownership. The unit of the State was the family and the home. But the moment we pass from the sphere of individual labor we encounter another principle, which was always applied, though not always by the same methods, to public utilities. This was the principle of public ownership and control.

If the Mormon leaders had desired to organize their industrial life in a way to make large private fortunes for themselves, no single item in the list of Utah's resources would have offered a better chance for speculation than the water supply. It was perfectly feasible under the law for private individuals or companies to appropriate these waters, construct canals, sell water rights, and collect annual rental. By adopting this method, which widely prevails in other western States, they could have laid every field, orchard, and garden—every individual and family—under tribute to them and their descendants forever. Neither in law nor in practice, at that time, was it any more a moral and economic wrong to appropriate privately and hold against the public the natural wealth of the streams than it was to do the same with the natural wealth of the mineral belts on government land.

Probably the Mormons owed their escape from the misfortune of private irrigation works mostly to the fact that this feature of their institutions was established when none of their people possessed sufficient private capital to engage in costly enterprises. They started upon a basis of equality, for they were equally poor. They could buy water rights only with their labor. This labor they applied in co-operation, and canal stock was issued to each man in proportion to the amount of work he had contributed to its construction. This in turn was determined by the amount of land he owned, the owner of twenty acres doing just twice as much work as the owner of ten. Here we see the influence of aridity not only favoring, but compelling, the adoption of the principle of associative enterprise, as mentioned in a previous chapter. But before discussing the wider results of this influence in the life of Utah, it is important to observe the characteristic forms of agriculture which grew out of these new conditions.

We have seen that Brigham Young had made twenty acres the maximum size of farms in the Salt Lake settlement. He now proceeded to lay down a philosophy very different from that which prevailed on the large farms of the wheat and corn country whence he had come. He urged that each family should realize the nearest possible approach to absolute industrial independence within the boundaries of its own small farm. His sermons in the tabernacle dealt less in theology than in worldly common-sense. The result is an agricultural system peculiar to Utah.

Just as we have the cotton-belt in Texas, the corn-belt in Nebraska, the wheat-belt in Dakota, and the orange-district in California, so in Utah we have the land of the diversified farm. This is the first and one of the most precious fruits of the industrialism which had been so deeply rooted in the plan of general land ownership.

Much of the misfortune which the settlers of the Mississippi Valley have endured during the past decade is due to the fact that their industrial system was founded on the speculative instinct. They acquired large farms, because they hoped to get rich out of the rise in land. They engaged in the production of single crops, because they were gambling on the hope of great prices for these staples. They mortgaged their homesteads to make costly improvements, because they had the utmost faith in future big prices for the land and its product. It is very easy to comprehend the virtues of Utah industrialism when we may make use of a Texas cotton plantation or a Dakota wheat farm for a background. In the one case we see the little unmortgaged farm, its crops insured by irrigation, systematically producing a variety of things required for the family consumption. A generous living is within the control of the proprietor of such a home. In the other case we see the single crop exposed to the mercy of the weather and the markets, its owner employing many hired hands, and going to the town to buy with cash nearly all that is necessary to feed his family and laborers.

The Utah system was clearly the outgrowth of the peculiar conditions with which the Mormons dealt. They were so far removed from all centres of production as to make self-sufficiency an imperative condition of existence. Hence they were taught the gospel of industrial independence in its purest and most primitive form. And self-sufficiency is the most striking characteristic of their civilization to-day. Wars and panics have swep t the country since the pioneers built their homes in Salt Lake Valley, but they and theirs have not gone hungry for a day or an hour. Nor need they do so while water runs down hill and mother earth yields her increase.

The conquest of Utah began with the establishment of agriculture, which is everywhere the foundation of civilization. Brigham Young realized, as the American people may well do to-day, that there can be no prosperity if agriculture languishes. He realized that whatever the Mormon people might have in the future—whatever of factories, stores, and banks, whatever of churches temples, and tabernacles—must come primarily from the surplus profits of the soil.

As soon as his people had been supplied with food and shelter, he turned his attention to the development of a broader industrial life. Workshops, stores, and banks were necessary to furnish facilities for manufacture, distribution, and exchange. All these enterprises were undertaken in a co-operative way under the familiar forms of the joint-stock company. Those who were unwilling to engage in them upon these terms generally left the church and set up for themselves. At the beginning there was no capital for such undertakings except the capital which resided in every man's land and labor—no wealth but the commonwealth. As all had started on a basis of equality, so all were given an equal chance to participate in the new industrial, mercantile, and banking enterprises of the Territory. When a factory or store was to be started subscription papers were circulated and everybody urged to take some of the stock. Payments were made sometimes in cash, more often in products, not infrequently in labor. Of one thing there has never been a scarcity in Utah—this is the chance to work. And labor has always been exchangeable there for other commodities, including bank and mercantile stock. Otherwise it would not have been possible to have secured anything like the wide distribution of these stocks which now prevails.

In the early years the industries were of a crude sort. Everything had to be hauled in ox-teams over a thousand miles of deserts, plains, and mountains. The people used almost no money in their daily transactions. As a medium of exchange they had printed slips of paper known as "tithing-house scrip." This answered every purpose of exchange money, while the prices of commodities were regulated by the standard of values which prevailed elsewhere. But while the local scrip did very well for all home purposes, it did not enable the people to purchase the supplies of machinery which they needed from abroad. The process of equipping their factories was, therefore, necessarily slow, but they rapidly developed an army of skilled artisans, which was constantly augmented by immigration. But even without assistance from the great world which lay so far beyond the borders of their own valleys marvellous progress was achieved in the arts and industries.

Brigham Young was strenuously opposed to the development of the mines by his people, believing that what they might gain in wealth from that source would be much more than offset by the demoralization which would come to his industrial forces with the rise of the speculative spirit. Above all other virtues he placed that of sober industry, earning its bread in the sweat of men's faces. That the mines would some day be worked by "Gentiles" he had no doubt, and he rightly calculated that his own people would enjoy more prosperity by feeding the miners than by working the mines. A few of the many millions afterwards taken from the mountains around Salt Lake would have facilitated the growth and equipment of the Mormon industries immensely during the early years. But time and patience accomplished in the end all — perhaps more than an abundance of original capital might have done. Nearly all the industries essential to a complex and symmetrical business economy have been established for many years. Every important settlement has its co-operative store and bank. From the great beet-sugar factory at Lehi down to the smallest mercantile enterprise in the smallest hamlet, the business is owned by a multitude of stockholders.

The capital represents the surplus profits of the many. The system bears no likeness to Socialism. Nothing is owned by virtue of citizenship nor of membership in the church. No one owns a dollar's worth of stock who has not earned and paid for it. The system is nothing but the joint-stock company with what may be called a generous and friendly interpretation. That is to say, it is really desired that everybody shall have an interest, and that all shall share the benefits. It should not be understood by any means that all have an equal ownership in these various enterprises, for the Mormon system has not resulted in making men equally successful. All have had an equal chance however, and the weak have been watched over and assisted by the strong. Indeed, this latter is one of the few good results to be credited to the exercise of church authority in secular affairs.

It would be quite impracticable to attempt to follow the history of any considerable number of the many co-operative enterprises of Utah. Neither are figures available for a satisfactory generalization of results. But the whole system is typified in the experience of one monumental enterprise—Zion's Co-operative Mercantile Institution. This great house is in a sense the mother and the model of all the Mormon stores in Utah and its surrounding States. Mr. Thomas G. Webber, the successful superintendent of "Z. C. M. I.," as it is familiarly called, describes the history of the enterprise as follows:

"The Institution was organized October 16, 1868; commenced business March 1, 1869; was incorporated for twenty-five years from October 5, 1870, and the capital was then $220,000. It was reincorporated for fifty years September 30, 1895, with a capital stock of $1,077,000.

"During the life of our first incorporation period we have sold $76,352,686 worth of merchandise, and paid to the railroad and express companies for freight $6,908,630.

"We have paid out in cash dividends $1,990,943.55, and in stock dividends $414,944.77. During the panic in 1873, for prudential reasons, we passed our dividend, and continued to do so until 1877, but during the whole of the period we have been in business, some twenty-seven years, we have paid to our stockholders an average dividend of nine and one-third per cent. for each and every year, or two hundred and forty-three per cent. in all; $1,000 invested in our capital stock on the 1st of

March, 1869, at the end of September, 1895, when our incorporation ran out, had accumulated to $2,014.30, and in addition to this we have paid upon this $1,000 in cash dividends the sum of $4,218.05.

"We have turned out in our manufacturing departments boots and shoes to the value of $2,053,294.43, and in our duck clothing and shirt factory upwards of $80,000 worth. Last year (1895) it was an off-year with our manufacturing departments, but we turned out 75,400 pairs of boots and shoes, and 15,648 dozen overalls, shirts, etc."

This is the history of Utah's largest co-operative undertaking. It is a history which no friend of co-operative effort will blush to read, for it proves that a great business can be as successfully administered in the interest of the many as in the interest of a few. The latest and largest of the Mormon industrial enterprises is the beet-sugar factory, owned by seven hundred stockholders, which in 1895 produced considerably more than 700,000,000 pounds of sugar and paid a cash dividend of ten per cent. Its later dividends are much larger. It also furnished a profitable market for the products of many irrigated fields.

While the most satisfactory results of co-operative enterprise have been obtained in the last two decades, much was achieved in the early day. As early as 1850, when Salt Lake Valley had been settled less than three years, the industrial products amounted to only a little less than three hundred thousand dollars. Ten years later they had mounted nearly to the million mark, and in 1870 they considerably exceeded two and a quarter millions. In 1895 the total was close to six millions. The growth of these hard-won industries has naturally fostered a feeling of intense loyalty to home products. Foreign goods are not a badge of honor. The Utah man wears Utah clothes, made in Utah factories, from wool sheared from the back of Utah sheep, with the same pride that a New York man wears a London hat and a New York woman a Paris gown.

Let us look now at the broader results of the Mormon labor in the wilderness. The church historian, Mr. A. Milton Musser, has made a careful estimate of the financial results which may fairly be credited to the irrigation industry in Utah. In doing so he communicated with church leaders throughout the State and compiled the results of his correspondence with the utmost care. The statement is given just as he prepared it, without attempt to discuss it in detail. To fully comprehend it however, the reader must remember that the Mormons began in poverty, having almost nothing to invest except the labor of their hands and brains, and that all they have expended in a period of nearly fifty years for all classes of improvements—from the first shanty to the last turret of the last temple—came primarily from the soil. Here is the balance-sheet of the Mormon people as Mr. Musser prepared it:

Cost of establishing the 10,000 farms ($187.50 per farm per annum)..................	$75,000,000
Cost of making irrigation canals and ditches ($37.50 per farm per annum)...........	15,000,000
Cost of irrigating 10,000 farms and gardens ($24.00 each per annum)...............	9,600,000
Building factories.........................	5,000,000
Building temples..........................	8,000,000

Building churches and schools..............	$4,000,000
Cost of missionary work....................	10,000,000
Cost of immigrating and sustaining the poor	6,000,000
Living of the farmers ($375 to each family per annum)........................	350,000,000
Cost of roads and bridges in mountains and valleys............................	4,000,000
Cost of Indian wars, building forts, stockades, breaking up settlements, etc............	5,000,000
Cost of feeding and clothing Indians and establishing Indian missions, farms, schools, etc..........................	2,000,000
Cost of resisting the invasion of the army of 1857, and of the people of Salt Lake county and the counties north moving south into middle and southern Utah....	6,000,000
Loss sustained by crickets, locusts, and grasshoppers..............................	2,500,000
Unsuccessful early experiments in making iron, sugar, paper, nails, leather, cotton-raising, mining, etc..................	6,000,000
Cost of defence against anti-polygamy legislation believed to be unconstitutional....	3,000,000
Heavy freight rates from the Missouri river and the Pacific coast before the railroads	8,000,000
Cost of establishing the Overland Mail and Express Company, purchase of Fort Bridger, and establishment of Fort Supply, abandoned and afterward absorbed by the army of 1857....................	2,000,000
Protecting overland travel, succoring and feeding California, Oregon, and other emigrants............................	1,500,000
Cost of colonizing Carson and Green River counties, abandoned because of the army of 1857..........................	2,000,000
Cost of establishing colonies on Salmon	

river, in Lower California, and the sugar plantation near Honolulu..............	$1,500,000
Cost of local telegraph and railroad lines....	3,000,000
Cost of obtaining fuel, and building and fencing materials, from the rugged mountains and canyons many miles away	10,000,000
Cost of making settlements on the Muddy, Call's Landing, Florence, Sunset, and other localities, afterwards abandoned because of adverse conditions subsequently developed..............................	1,000,000
Losses by fire ($20,000 per annum)..........	800,000
Taxes....................................	8,000,000
Miscellaneous expenditures................	12,000,000
	$562,900,000
Less the personal property brought into Utah by immigrants, such as cattle, wagons, cash, etc..............................	20,000,000
	$542,900,000

In his note transmitting these figures Mr. Musser writes: "The inclosed has been submitted to the inspection of Presidents Woodruff, Cannon, and Smith, and Bishops Preston, Burton, and Winder, as well as to others conversant with such matters. All agree that the estimates are as fair as they can be given." And he adds, with a reverence characteristic of his people: "While much of our prosperity is due to industrious, temperate, and frugal habits of life, yet we never lose sight of the overruling hand of the Almighty in all these results, and to Him be given praise and thanksgiving without stint."

In a private letter accompanying these statistics Historian Musser directed attention to the fact that upon this showing each Mormon farmer enjoyed an average income of four hundred and eighty-two dollars *above* the cost of living for each of the more than forty years which the statement covers. This is a considerably higher return than the *gross* amount averaged by wage earners in the United States.

While in many particulars this imposing statement of results may be open to criticism, there can be no doubt that it was prepared with conscientious care. It is presented here for what it may be worth. To the writer it seems to confirm the impression of a vast material achievement which comes to any person upon visiting Utah and looking about him. For the present purpose the precise statistical facts are of less consequence than the economic principles which have produced what everybody acknowledges to be a wonderful result. These principles may be briefly summarized as follows:

GENERAL LAND OWNERSHIP, LIMITED TO THE AMOUNT WHICH FAMILIES AND INDIVIDUALS COULD APPLY TO A USEFUL PURPOSE.

SELF-SUFFICIENCY IN AGRICULTURE, AIMING AT THE COMPLETE ECONOMIC INDEPENDENCE OF THE PEOPLE, INDIVIDUALLY AND COLLECTIVELY.

THE PUBLIC OWNERSHIP OF PUBLIC UTILITIES, SUCH AS WATER SUPPLY FOR IRRIGATION AND DOMESTIC USES.

THE CO-OPERATIVE, OR ASSOCIATIVE, OWNERSHIP AND ADMINISTRATION OF STORES, FACTORIES, AND BANKS, THROUGH THE MEDIUM OF THE JOINT-STOCK COMPANY.

These are the underlying principles of the Mormon commonwealth. They are vindicated by the successful experience of the last half century. Nowhere else do so large a percentage of the people own their homes free from incumbrance. Nowhere else has labor received so fair a share of what it has created. Nowhere else has the common prosperity been reared upon firmer foundations. Nowhere else are institutions more firmly buttressed or better capable of resisting violent economic revolutions. The thunder-cloud which passed over the land in 1893, leaving a path of commercial ruin from the Atlantic to the Pacific, was powerless to close the door of a single Mormon store, factory, or bank. Strong in prosperity, the co-operative industrial and commercial system stood immovable in the hour of wide-spread disaster. The solvency of these industries is scarcely more striking than the solvency of the farmers from whom they draw their strength. No other Governor, either in the West or in the East, is able to say what the Honorable Heber M. Wells said in assuming the chief magistracy of the new State in January, 1896. "We have in Utah," said the young Governor, "19,816 farms, and 17,684 of the mare absolutely free of incumbrance." A higher percentage in school attendance and a lower percentage of illiterates than even in the State of Massachusetts, is another of Utah's proud records.

So far we have been dealing with facts that are beyond dispute. No one can deny that the Mormon industrial and commercial system is correctly described in the foregoing pages, nor that that system has made the people remarkably prosperous in an economic sense. But for the purposes of this book it is highly essential to determine just what weight should be given to the Mormon experience as a guide for future colonization effort in the arid West, and to what degree the Utah system is founded upon correct principles of industrial and social economy.

The problem can be summed up in two questions which have doubtless already occurred to the reader: Was the Utah experience possible without Brigham Young? Was Brigham Young possible without the Church?

The first of these questions may be answered unhesitatingly in the negative. Without a Brigham Young there could have been no such record of achievement in the deserts of Utah. He was the brains and the soul of the enterprise. He planned with extraordinary sagacity and wrought with tremendous vigor. Leave out that brain and soul—that sagacity and vigor—and we can conceive of no emigration from Nauvoo; of no successful march over plain and mountain; of no triumph over the almost insuperable difficulties which intervened between the arrival of the people in Salt Lake Valley in 1847 and the firmly established community of fifty years later. But what of that? The concession of the indispensable fact of Brigham Young amounts only to the concession, equally applicable to all human undertakings of magnitude, that leadership is absolutely essential.

This brings us to the other and more complicated question: Was Brigham Young possible without the Church? First let us see what manner of man he was.

Born in Vermont, of good native stock, he had the characteristics of the place and the race in a pre-eminent degree. He was shrewd and thrifty, far-seeing and intensely practical. He was of coarse fibre, deficient in the finer feelings, and devoid of all imagination of the poetic kind. Of his innumerable sermons and speeches nothing survives save an occasional homely maxim, such as, "Plough deep and plant alfalfa." Like all his sayings and all his works, this marks the mind and method of the materialist rather than of the idealist. Whatever else he really thought of polygamy, he at least believed it a capital method of increasing the population of a new country, and that happened to be the particular work upon which his effort and ambition were engaged.

A leader of men? Most emphatically, but of the grim and masterful sort—a Cromwell rather than a Lincoln. While no orator, he had strong persuasive powers. These were supported by splendid enthusiasm and optimism. He could set men at work with the conviction in their minds that success was certain, failure impossible.

This man was successful in what he undertook to do. He did not originate Mormonism. He added nothing to its creed or its literature, though he added much to its power. But finding the Mormons a despised and hunted people, he set himself the task of extricating them from intolerable surroundings, of leading them a thousand miles across an almost unexplored country, and of founding, in the midst of untried conditions, a commonwealth where they could rear their homes and temples and wax great and strong. Who can doubt that if he had undertaken to build a transcontinental railroad, like Ames and Huntington; to found a pork-packing business, like Armour; or to lead an army, like Grant, he would have commanded success? He had all the elements of a successful man in any of the greater walks of life where pluck and brains, determination and vast ambition, are the requisite qualities. If he was a religious fanatic, there never was another of his composition.

Poet or orator he could not have been; seer, revelator, and ecclesiastic he was not, save to the superstitious vision of his blind followers; but great, resourceful, and of commanding personality he was—a captain of industry, an organizer of prosperity; and the Utah of to-day is his undeniable claim to fame and his imperishable monument.

So much for the man. What of the Church? It was unquestionably the instrument used in the settlement of Utah. It is being used to-day as an instrument in settling portions of Canada, Mexico, and other localities. Regarded simply as a Church, it is successful numerically and financially. It is one of the few creeds where secular and religious affairs are brought into the closest association, and, for this reason, it is generally believed that church solidarity is the true explanation of the economic prosperity of the Mormons. This conclusion rests upon the theory that the Church sustains the industrial system. The writer emphatically dissents from this notion, and confidently asserts that precisely the reverse is the truth—that the industrial system sustains the Church.

The principles upon which the Mormon industrial and social structure was reared have been carefully presented in this chapter. These principles have worked successfully for fifty years. To determine the part which they had in the actual result, let us ask ourselves this question: Suppose the plans initiated by Brigham Young had failed to give his followers the security of a home and the certainty of a living; that their co-operative industry had produced losses rather than profits; that their village system had brought social discontent instead of satisfaction—what then? Is it conceivable that religious fanaticism could have held them together and lent such an impulse to their growth that to-day, nearly a quarter of a century after the death of Brigham Young, they should be growing faster than ever before, maintaining more missionaries and building more colonies in various parts of the world? Surely economic fallacy never produced such striking results as these in any other instance known to history.

It would perhaps be a tenable position to say that in Utah a sound economic system, working in conjunction with religious enthusiasm, produced the result now known of all men; but that would be very nearly equivalent to saying that the only way to solve the problem of reclamation and settlement in the arid regions is to turn the task over to the Mormon Church and to advise all who crave homes to join that organization. The writer believes that the attraction of Mormonism has consisted mostly in what it offered to the home-seeker, and that the secret of its cohesion is the prosperity that has resulted from its industrial system rather than the occult power of its creed.

Polygamy has so stirred the Christian world that no man may speak in praise of any of the Mormon institutions except at the risk of being misunderstood, or possibly regarded as an apologist for what the nation has condemned as a crime against womanhood. On the other hand, no candid mind can study the problem which confronts the American people—the problem of opening the door to the masses of our citizenship upon the unused natural resources of the nation—without realizing that Brigham Young and the State he founded furnish stronger and clearer light for the future of domestic colonization than any other experience that can possibly be discovered. It is in the earnest conviction that it is a high public service to show the virtues of the Mormon industrial system that this chapter is written.

CHAPTER II

THE GREELEY COLONY OF COLORADO

THE Greeley Colony of Colorado sprang belated from the seed of Fourierism sown broadcast in the forties. In all our social history there is no more interesting page than that which records the rise, progress, and temporary defeat of the doctrine of association. Fraught with the noblest aspirations, and welcomed and championed by the most brilliant minds, it disappointed, in actual practice, the high hopes of its friends. François Marie Charles Fourier devoted his life to elaborating his scheme of Socialism, and died a few years before the seed of his thought was wafted across the Atlantic to take sudden root in our soil.

The American impulse of Fourierism arose from the miseries of the hard winter of 1838. The doctrine had been imported by Albert Brisbane, a young gentleman of wealth and leisure who had studied the works of the French philosopher in Paris and returned to this country warm with these new hopes for humanity. Availing himself of the opportunity offered by the universal discontent, he plunged boldly into the agitation and attracted a remarkable degree of attention. Horace Greeley, then in the morning of his fame, espoused the new cause, at first cautiously, then with characteristic energy and daring. The period of agitation covered the years between 1840 and 1847. The men of thought soon won the confidence of the men of action, and a large number of associations for the purpose of bringing Fourierism to the practical test were formed in various States. In May, 1843, Mr. Greeley wrote in the *Tribune:* "The doctrine of association is spreading throughout the country with a rapidity which we did not anticipate, and of which we had but little hope. We receive papers from nearly all parts of the northern and western States, and some from the South, containing articles upon association, in which general views and outlines of the system are given. Efforts are making in various parts of this State, in Vermont, in Pennsylvania, Indiana, and Illinois, to establish associations, which will probably be successful in the course of the present year."

There was not much difficulty in obtaining recruits for these undertakings, and the experiment was entered upon with great enthusiasm. With a single exception, it ended in failure. The most famous of these colonies was Brook Farm, at West Roxbury, nine miles from Boston. Rev. George Ripley was the head of the enterprise. With him were associated, either as actual colonists or active sympathizers and supporters, Nathaniel Hawthorne, Ralph Waldo Emerson, Henry D. Thoreau, James Freeman Clarke, William Ellery Channing, Bronson Alcott, George Bancroft, Charles A. Dana, Margaret Fuller, and many others whose names rank high in the annals of American literature. Never before, and never afterwards, was such a galaxy of brains assembled in a single colony. Most of them were then in young manhood, with their fame all before them. But the historian of the enterprise sadly relates that, at the end of their first year they found they had a surplus of philosophers and a dearth of men who could hoe potatoes. And New England has been smiling about Brook Farm ever since. The end of Fourierism in the United States was the joint debate between Horace Greeley and Henry J. Raymond in their respective newspapers, the *Tribune* and the *Courier*, of New York.

In the minds of the devoted constituency of the New York *Tribune*, the idea of colony-planting as a means of improving the lot of average humanity had taken deep root, so that twenty-five years after Fourier's dream had ceased to flourish as a social experiment, a colony representing its hopes, if not its methods, could gain supporters.

The new venture was initiated by Nathan Cook Meeker, who had succeeded Solon Robinson as agricultural editor of the New York *Tribune* at the close of the war. In 1844 Mr. Meeker had been an active participant in the Trumbull Phalanx at Warren, Ohio. This had expired of ague, poverty, and dissension, after a fitful career of about three years. "If the place had been healthy," Mr. Meeker said afterwards, "we should have held out longer, and the idle and improvident would have got more out of the industrious and patient; but I have no reason to suppose that we should not have finally exploded, either in some fight, or at least in disgust." From this experience he emerged disappointed and destitute, but with valuable lessons for the future and unshaken faith in the utility of colonization effort. The knowledge thus dearly bought he was destined to apply, many years later, in a useful career as one of the founders of a State.

In the fall of 1869 Mr. Meeker had returned from a trip to the Far West, the object of which was to describe the Mormon industrial system in a series of letters to the *Tribune*. Encountering a snow blockade at Cheyenne, which compelled him to postpone his visit to Utah, he had gone to Colorado instead. It was at the time when the Kansas Pacific Railroad was pushing across the plains to the budding village of Denver, transforming the wagon-trail into a highway of civilisation. Everywhere Mr. Meeker beheld the dawn of a new industrial life in the midst of a wilderness. He was charmed with the climate and scenery, and impressed with the material wealth of the country's undeveloped resources. The old enthusiasm for colony-making filled his imagination. Wearied with a life struggle to remodel old social structures, he longed to avail himself of this opportunity to build on new foundations.

These hopes he communicated to his friend, John Russell Young, who agreed to bring the matter to the attention of Horace Greeley. This he did at a dinner held at Delmonico's in December, 1869. Mr. Greeley was instantly interested, and beckoned Mr. Meeker to join him at the table. "I understand you have a notion to start a colony to go to Colorado," said the editor. "Well," he continued, "I wish you would take hold of it, for I think it will be a great success, and if I could, I would go myself." Thus assured of powerful backing, Mr. Meeker at once proceeded to form his plans.

The prospectus of the new colony was drawn up by Mr. Meeker, but carefully weighed and revised by Mr. Greeley. A quarter of a century had elapsed since these men had been engaged—the one as active participant, the other as the most conspicuous American champion—in the Fourier scheme of association. It is interesting to observe just how much of the old plan survived in the new colony prospectus, when the thought of these leaders had been mellowed and broadened by many more years of life and experience.

In the Fourier communities the people had lived together under one roof, in the hope of effecting large household economies. There had been common ownership of land, and an attempt at equal division of labor. The unit of the community was the whole; the only individual, the public.

In forming the plan of the new colony the lessons of experience were not forgotten. There was but a single suggestion of the "phalanstery," or common household of Fourier days, and that was advanced in timid terms. "It seems to me," Mr. Meeker wrote, "that a laundry and bakery might be established, and the washing and baking done for all the community; but other household work should be done by the families." It was provided that the unit of society should be the family, living under its own roof; that farms and homes should be owned independently; that individuals should plan their own labor, and rise or fall by their industry and thrift, or lack of them. The new ideal was that of an organized community which should give the people the benefit of association without hampering individual enterprise and ability. It furnished a means of settlement essentially different from that under which the Middle West had been developed.

Land was to be purchased on a large scale with a common fund. This cheapened its cost, and gave the colonists an important measure of control in its sub-division and development. The settlement was to be made almost wholly in a village, the land being divided into blocks of ten acres, and the blocks into eight lots for building purposes. It was proposed to apportion each family "from forty to eighty, even one hundred and sixty acres," adjoining the village. Northampton, in Massachusetts, and several other New England towns and villages, had been settled in this manner. A feature of much interest was the proposal to have the residence and business lots sold for the benefit of the colony's treasury, the capital so obtained to be appropriated for public improvements, such as building a church, a town-hall, and a school-house, and establishing a public library. This plan marked an important departure in town-making. Town sites, as a rule, especially where the community promises a rapid growth, are treated as opportunities for private speculation. The boom comes, and everybody prospers; the boom goes, and a few schemers have managed to acquire nearly all the cash capital. Under the new plan, as the prospectus pointed out, "the increased value of real estate will be for the benefit of all the people." They would receive these benefits, too, in the best form, as in the shape of permanent improvements essential to their social and intellectual well-being, and of capital available for industrial purposes.

Other advantages of settling in a village were presented as follows: "Easy access to schools and public places, meetings, lectures, and the like. In planting, in fruit-growing, and improving homes generally, the skill and experience of a few will be common to all, and much greater progress can be made than where each lives isolated. Refined society and all the advantages of an old country will be secured in a few years; while, on the contrary, where settlements are made by old methods people are obliged to wait twenty, forty, or more years."

This prospectus was published in the New York *Tribune* of December 14, 1869, with a hearty editorial indorsement. Spite of radical departures in the matter of private landholding and individual industry, the vital spirit of Fourierism lived and breathed through the cautious lines of the announcement. There was still the high ideal of social and civic life, of industrial independence, of a scheme of labor which should give to the laborer an equitable share of what he produced. There was still the plan of co-operation in achieving things for the common benefit. There was still the craving for a society composed of sober, temperate, industrious people. The common household had been discarded for the family home and hearth-stone, but for the barbarism and isolation of life on great farms there had been substituted the association of homes in the village centre, with the best social and intellectual opportunities. Behind the new plan, as behind the old, stood the patient energy and faith of Meeker and the glorious optimism of Greeley.

The announcement had met with a prompt and enthusiastic response at the hands of several hundred people, who had organized the Union Colony of Colorado at a meeting held at the Cooper Institute in New York, where Horace Greeley had presided. A committee had selected twelve thousand acres of railroad and government land in the valley of the Cache la Poudre, twenty miles northwest of Denver, on the line of railway then building to Cheyenne. The pioneers of the colony were thus able to begin settlement in the spring of 1870, and to bring to the test of actual experience the social and industrial plans set forth in the prospectus. A party of eastern people, most of whom came from cities, they entered cheerfully upon the task of adjusting a high ideal to the untried conditions of a country which had previously known only the Indian, the hunter, and the cowboy. Their experience for the next twenty years has a larger significance than merely local history, since the community is one of the landmarks in western life.

Mr. Meeker having refused the use of his own name, the new town was christened "Greeley," and this name was popularly applied to the colony also, in spite of its incorporated title. The first severe test of the co-operative principle, which had been relied upon for the larger enterprises, arose in connection with the building of canals. There had been no misconception as to the need of irrigation, but it was supposed that the works could be quickly constructed and the new methods of agriculture readily learned. The original estimate of cost was twenty thousand dollars. The actual outlay before the works were completed reached four hundred and twelve thousand, or more than twenty times the estimate. For resources to meet this unexpected demand, the colony had only receipts from the sales of property and the subscriptions and labor of its members. The result was not reached without serious dissensions and some desertions, but the works were built, and the community survived with its co-operative principle intact. It is not to be believed that a private enterprise could have lived through a similar experience with the same slender financial resources, for it was the public spirit and pride which saved the day at this critical juncture. These increased as difficulties multiplied, and rose with the tide of outside criticism and abuse. The process welded the people together, and made them strong enough to meet successfully the obstacles which yet remained.

Having provided water for their lands, the settlers proceeded to create the irrigation industry of Colorado; for nothing worthy of the name existed on the scattered ranches of the sparsely settled Territory. The newcomers brought their intelligence to bear upon the problem of perfecting skilful methods of irrigation and cultivation, and of discovering the classes of crops best adapted to the soil and climate. This work quickly led them to realize another disappointment of serious import. They had dreamed of orchards and vineyards, and of homes set in the midst of beautiful flowers and delicate shrubbery. Experiment soon taught them that they had been deceived about the character of the country. The hopes which had been built upon the fruit industry failed utterly, and the colonists were compelled to fall back upon general farming. This involved somewhat larger farms, and rendered more difficult the realization of their social plans. Very likely it saved them from the evils of the single crop which has marred the prosperity of many agricultural districts. The diversified products of the soil yielded them a comfortable living. Since there was no hope of obtaining cash income from fruit, they sought another surplus crop, and found it in the potato, to which their soil proved to be peculiarly adapted. They made an exhaustive study of this culture, and at last produced in the "Greeley potato" one of the famous crops of the West. Its superiority readily commands the best place in the market, and there have been years when the crop has returned a million dollars to the potato districts of which the colony is the centre. The farmers invented a pool system which frequently enabled them to control the output, and so influence prices in their favor.

Events proved that the colonists were gainers by reason of the trials and disappointments which attended the establishment of their industrial life. Though the cost of their canals had so far outrun their expectations, they obtained their water supply much cheaper than did subsequent communities who patronized private companies. At Greeley the cost of a water-right for eighty acres was three hundred and fifty dollars. This made the user a proportionate owner of the works. Where canals were private, settlers paid twelve hundred dollars for precisely the same amount of water, while the works remained the property of a foreign corporation. The difference in the price of water under the two systems represented a very handsome dividend for those who had persisted in their allegiance to the co-operative principle. In the same way, the colonists profited from their struggle to realize the best agricultural methods. They won a reputation for their products which possessed actual commercial value, and they became the teachers of irrigation, furnishing practical examples to students of the subject and contributing largely to its literature. These results must be credited to the fact that the community was organized, and that the people acted with a common impulse.

Passing now from the industrial to the civic side of the colony life, we find that the high public spirit in which the community was conceived left its marks not less indelibly. In the original prospectus Mr. Meeker had plainly stated, "The persons with whom I would be willing to associate must be temperance men and ambitious to establish good society." This was no sounding phrase, for the founder and his fellow-colonists wrote their principles into the title deeds which transferred farm and village property from the company to individuals. These provided that if intoxicating liquor were ever manufactured or sold on the land, title should immediately revert to the colony. The provision was enforced with splendid intolerance. Those who were not in accord with its spirit had not been invited to come, nor were they made comfortable while they stayed. Their unbending attitude on this subject gave the men of Greeley the title of "Puritans," which was a unique distinction in the Far West, in that day of cowboys and border ruffians. The prohibition clause in the deeds was stoutly resisted by a small minority, and went from court to court, until it was finally vindicated by the supreme tribunal at Washington. The Greeley local sentiment has always upheld the principle, and insisted that it was responsible for the admittedly high character of the community. Like several of the colony's plans, it has been extensively imitated.

The government of the community was vested in executive officers, but was actually ruled by public opinion. This found expression in numerous town meetings held in Colony Hall, which was one of the earliest buildings erected. Here all the public affairs were discussed with perfect frankness to the last detail, and no public officer ventured to stray far from the conclusions there pronounced.

Not even the early hardships and disappointments were permitted to mar the social life of the colony. The people made the most of the opportunities offered by the association of homes in the village, and organized a variety of social and intellectual diversions. At an early period an irreverent newspaper writer remarked: "The town of Greeley is a delectable arena, for of the entire population three-fourths are members of clubs that are eternally in session. Day may sink into night, flowers may bloom and fade, and the seasons roll round with the year, but Greeley clubs are unchangeable." In one of the letters by which Mr. Meeker kept the readers of the New York *Tribune* informed of the progress of the community, he spoke of these "overflowing meetings," and said: "In all our experience we have never seen such institutions so well sustained; and if we wanted to show strangers the best that is to be seen of Greeley we would have them visit the Lyceum."

David Boyd, who was both a prominent actor in these scenes and the historian of the colony, writes of the same subject, and throws a suggestive side-light on a notable trait of western life when he says: "In coming to a country which offered so many new questions for solution and presented so many new aspects of life, the minds even of those past their prime experienced a sort of rejuvenation. Being nearly all strangers to one another, each was ambitious to begin his new record as well as possible, and so put the best foot foremost." Here is the explanation of much of the superior energy which marks the life of new communities, and here lies the hope of social progress through colonization. The individuality all but obliterated in the great city springs anew and develops into blossom and fruitage in the fresh soil of colonial life. Institutions which would be quite impracticable in old and crowded centres get a footing in new countries, where men may exert untrammeled energies, and move freely in that atmosphere of social equality which is certain to characterize new communities and likely to endure while they continue small.

In considering the net results of Greeley Colony, it is important to note first that it has been thoroughly successful. In this respect it presents a striking contrast to the Fourier experiment, from which it may be said to have descended. Each man prospered according to his merit, and what the community undertook to do by means of co-operation it accomplished. It cannot be said that the latter principle was applied extensively. The capital realized from the sale of property was so largely absorbed in the construction of canals as to leave little surplus for other industrial and commercial enterprises. If one-half of this capital had been available for stores, banks, and small industries, it is likely that much which was necessarily left to private initiative would have been undertaken by the colony. In that case we should find broader lessons in co-operative effort than we do now. It it is also important to note that the community owed its prosperity to its high ideal and uncompromising public spirit. There was here no common religious tie as in the early New England colonies; no shadow of persecution such as that which bound the Mormon pioneers together in an indissoluble brotherhood. The nearest approach to this influence was the prohibition sentiment, and this formed but a small part of the original plan. These colonists were earnest men and women who had gone forth to make homes where they could combine industrial independence with social equality and intellectual opportunity. They were grimly determined to accomplish what they had undertaken. This spirit, and this alone, kept them from going to pieces during the first five years, and laid the foundation for their permanent prosperity.

Both Colorado and the arid West owe much to the example of Greeley. It lent an impulse to the development of their civic character, and made a deep and lasting impression upon their agricultural industry. The influence of the community on its immediate surroundings is yet more plainly visible. Its success resulted in large irrigation developments and numerous settlements in Colorado, Wyoming, and western Nebraska. A community without a pauper or a millionaire, Greeley has yet had a surplus both of men and of capital to contribute to the making of new districts. The colony of to-day is a well-built town of comfortable homes and substantial business blocks, surrounded by well-cultivated farms connected by a comprehensive canal system, which is the property of the land-owners. Although in periods of general business depression it has felt the heavy hand of hard times, few communities in the world possess a better assurance of a comfortable living in the future, while none has better educational and social advantages.

Horace Greeley followed the colony's development with the closest interest, writing frequent letters of advice, and even finding time to pay a hurried visit. His last letter to Mr. Meeker, written six days before his death, was as follows:

"FRIEND MEEKER,—I presume you have already drawn on me for the one thousand dollars to buy land. If you have not, please do so at once. I have not much money, and probably never shall have, but I believe in Union Colony and you, and consider this a good investment for my children."

To N. C. Meeker Mr. Greeley's death was, indeed, calamitous. Depriving him of necessary income from newspaper sources, as well as of financial backing in the colony operations, it made it necessary for him to seek employment in the public service, and this was directly responsible for his death. He was massacred by the Indians while serving as agent on the White River reservation. His work for the colony had been entirely unselfish, and his name deserves high rank among the founders of western civilization.

CHAPTER III

THE EVOLUTION OF SOUTHERN CALIFORNIA

THE most valuable lessons in all the romantic history of California may be found in a trivial corner of the great commonwealth. Upon a clear day the eye may readily scan its entire length from the San Timoteo hills to the shining sea. Between its parallel mountain ranges the width of the district seems but two or three miles, though in reality it is from ten to twenty miles. Ignoring the nomenclature of local districts, this is the San Bernardino Valley. It is upon this narrow territory that to a great degree the fame of California climate and productions rests. Here institutions have been created in the last thirty years which are destined to exert a powerful influence upon the future of the West.

What Holland was to the life of Europe in the fourteenth, fifteenth, and sixteenth centuries, southern California is to the life of the Pacific coast at the end of the nineteenth century. The industrial impulse which the men of the Netherlands caught from their conquest of the sea, the men of the southern valleys caught from their conquest of the desert. "Curbing the ocean and overflowing rivers with their dikes," says one of the closest students of Dutch history, "they came to love the soil, their own creation, and to till it with patient, almost tender care." So they became the fathers of scientific farming in Europe. They wrought a marvellous revolution in the methods of cultivating the soil. "When Catherine of Aragon wished for a salad she was compelled to send for it across the Channel by a special messenger." The civilization founded upon this wonderful agriculture maintained its high character through the whole range of their economic life. The habits of skilful industry which grew from the intensely cultivated soil conferred the same prosperity when adapted to the workshop and the store. The thread of co-operation spun from their common labor on the dikes ran through the entire industrial fabric of the crowded little nation. The influence of neighborly association involved in the conditions of existence on farms of petty size colored and shaped their social life. As it was in Holland, so it is in southern California.

The men of the southern valleys made the small-farm unit supreme. With marvellous patience and intelligence they worked out the highest methods of watering and tilling the soil known to the world. Tempering their speculative instincts with love of home, they developed towns and surroundings of rare beauty and comfort, and made them centres of high social and intellectual life. To compare these conditions with those which prevail in the great wheat- and cattle-ranches of the North, where labor is mostly servile, and where beauty has never laid its hand upon the home or dooryard, is like comparing Holland to Paraguay. Although the South has by no means escaped the evils of the single crop, it has vindicated irrigation and the small farm, and the extraordinary social possibilities inherent in both.

These are the valuable lessons which may be set against the failures and disappointments of the last two decades.

In the stormy and heroic days of the gold epoch, of the Bear Flag, of the American conquest, and of the vigilance committees, southern California played a small part. Its past is the dreamy memory of old mission days, of peaceful shepherds, of great haciendas, of a land dominated by Spanish folk and speech. The land was a desert of sage-brush and cactus, in which a few scattered mission gardens made charming oases. Along moist river-bottoms there were sometimes fields and gardens, though not of the highest type. On the uplands light crops of wheat and barley were occasionally harvested, if spring rains happened to be fairly generous. But it was, apparently, a country which offered nothing to the stranger save climate and scenery. To this barren place came irrigation and the Anglo-Saxon, bringing a new era in their train.

The evolution of southern California may be studied in the experience of two representative colonies. These are Anaheim and Riverside. Both were undertaken by comparatively poor men, and made important contributions to the permanent prosperity of the district in which they settled. The success which they achieved and the methods by which they accomplished it colored and shaped the larger institutions which grew from these pioneer plantings. Anaheim owes its historical importance to the fact that it was the mother colony, but it gains added interest as an example of the way in which a number of petty capitalists may combine their means in large enterprises. It is useful, too, as showing the

CALIFORNIA CONTRAST—PICKING FLOWERS AT PASADENA, WITH THE SNOW SEVEN FEET DEEP ON MOUNT WILSON

outcome of the settlement of city workingmen on agricultural lands. Riverside represents a higher degree of social conditions, and is especially important and interesting as an example of the influence exerted by an entirely new element of population upon a country which had been neither developed nor appreciated by its natives and early settlers. A brief glance at the beginnings of these two communities is essential to any just comprehension of the condition and tendencies of the southern California of to-day.

Anaheim was projected forty years ago by a party of Germans in San Francisco. They were all mechanics and small tradesmen, and each was possessed of a modest amount of savings. It was proposed that this capital should be united in a common fund and used for the purchase and improvement of a large tract of land. For this purpose a colony association was formed, the members paying one hundred dollars each and agreeing to make further contributions in monthly instalments. A committee was sent out to discover a good location and contract for its purchase. A body of land near the Santa Ana river, twenty-five miles southeast of Los Angeles, was chosen. A part of the colony was then detailed to build an irrigation canal, divide the land into twenty-acre farms, with a central village, and plant the whole tract in orchards and vineyards. In the mean time the main body of the association remained in San Francisco, earning money and sustaining the work in the field. When the colony had thus been completely prepared for occupancy, the settlers came with their families, building their houses in the village and assigning the farms to individuals by drawing lots. In order to make this division equitable, those who obtained the choicest property paid a premium, which was divided among those to whom the poorer places had fallen. Most of the colonists devoted themselves exclusively to agriculture, but enough opened small shops and worked at their trades as blacksmiths, carpenters, painters, shoemakers, and tailors, to meet the needs of the community. With the division of the land the association settled its accounts, and only the irrigation canal remained public property. Co-operation had served an excellent purpose, however, in enabling the people to obtain their land at first cost, and to have it improved skilfully and economically in advance of their coming.

Beyond the hope of dwelling beneath their own roofs and working for themselves, the founders of Anaheim had brought no special ideal to the southern valley. They were people of common tastes, well content with simple prosperity and comfort. The community was thoroughly successful. It is also possible to record an almost uniform story of individual ease of life for the settlers. While a few became discouraged and sold out to their neighbors, much the greater number remained and became comfortably well off, while a few rose to wealth. They had come to the colony from the employments of city life, yet readily adapted themselves to the work of tilling the soil of their small farms. But the true importance of Anaheim was seen in the impulse which it gave to a new form of development in southern California. It had been a region of great ranches, where live-stock and grain held almost complete sway. Anaheim pointed the way to the subdivision of large estates and the intensive cultivation of the soil with the aid of irrigation. This demonstration was destined to work a revolution in the character of the people and country.

The Riverside Colony, perhaps the most widely celebrated of any of these communities, is a better example of the colonial life of California. In a truer sense than Anaheim, it is a product of irrigation, and it illustrates more fully than the mother colony the social possibilities inherent in this form of agriculture. Its history reveals a curious struggle between the forces of co-operation and of private enterprise, in the course of which both lent much strength to the colony and exerted a marked influence upon its fortunes. Like most of the pioneer settlements, Riverside was the dream of comparatively poor men who sought, in the fresh opportunities of a new country, better conditions for themselves and their children. The enterprise originated with Judge North, of Knoxville, Tennessee. His prospectus was issued from that place in the spring of 1870, and evoked a large response from many different States. In this prospectus the founder did not undertake to outline a social organization with any detail.

"Appreciating the advantages of associative settlement," ran the circular, "we aim to secure at least one hundred good families who can invest one thousand dollars each in the purchase of land; while at the same time we invite all good, industrious people to join us who can, by investing a smaller amount, contribute in any degree to the general prosperity." The advantage of co-operative over individual settlement was rather forcibly expressed: "Experience in the West has demonstrated that one hundred dollars invested in a colony is worth one thousand dollars invested in an isolated locality." That the projectors had formed a very decided opinion as to the most favorable location is evident in the following: "We do not expect to buy as much land for the same money in southern California as we could obtain in parts of Colorado or Wyoming; but we expect it to be worth more in proportion to cost than any other land we could purchase within the United States. It will cost something more to get to California than it would to reach the States this side of the mountains, but we are very confident that the superior advantages of soil and climate will compensate us many times over for this increased expense."

His circular had attracted the attention of a few men of considerable means, and with these Judge North set out for California to select the site of the undertaking. With the rare intuition which eastern men have frequently displayed in going to the West, the newcomers selected a location which seemed quite preposterous to the natives of the country. Planning the most ideal development which had thus far been attempted, they deliberately bought lands which had formerly been assessed at a valuation of seventy-five cents an acre. These lands then constituted a sheep pasture of inferior sort. They were similar to the stretch of desert which the transcontinental traveller sees in passing through Arizona. After the winter rains they bore a short-lived crop of wild flowers, but during most of the year they offered nothing more attractive than sage-brush and mesquite. The Mexican who owned them had not sufficient imagination to perceive how the new proprietors could realize a profit upon the modest sum of two dollars and a half an acre, for which he gladly sold them. But Judge North and his friends had two well-defined ideas in their brains. One was irrigation; the other, oranges. To the natives the first seemed impracticable, because of the expense; and the other ridiculous, because no one had ever raised oranges there upon a commercial scale.

The Santa Ana river rises in the Sierra Madre mountains, drawing its volume from a multitude of springs and canyon streams. It flows southwesterly for a distance of seventy miles, where it empties into the ocean. Riverside is about twenty miles from the source of the stream, and lies on the bluffs along its eastern bank. The conditions did not present such opportunities for the cheap and easy diversion of the waters as the Mormon pioneers found in Utah. In later years, as the demand for irrigation grew constantly larger and more insistent, it became necessary to resort to the very highest type of works for the distribution of water, and even the earliest canal required a cash outlay of fifty thousand dollars. Fortunately the capital was available, and thus the work of development went forward without faltering. The original canal was completed in the spring of 1871.

The enterprise had resolved itself into a private stock company, owning both the land and the water. The land was now sold to the colonists for twenty-five dollars an acre. This included the right to purchase a certain amount of water, for which there was an extra charge in the form of an annual rental. At the beginning this amounted to about one dollar an acre, but it rose with the demand for water, and the need of costly improvements in the system, until it reached an annual charge of ten dollars an acre.

In the experience of Riverside we may see the commercial romance of irrigation in its most striking form. The original sheep pasture, assessed at seventy-five cents an acre, sold readily at twenty-five dollars an acre when irrigation facilities had been supplied. While this represented a handsome profit to the original investors, it was extremely moderate compared with the returns which the second purchasers realized. A few years later the unimproved lands sold for prices ranging from three hundred to five hundred dollars per acre. The improved orange orchards, which had been evolved from the sheep pasture, were valued, and actually sold, at one thousand to two thousand dollars per acre. There have been years when the best of them earned a profit of fifty per cent. on the higher figure.

Riverside was destined to win its chief celebrity as the pioneer orange colony. Its founders had based their faith in the possibilities of this industry on what they had seen in the gardens of old missions.

They did not hesitate to plant their lands largely with citrus fruits in the face of many predictions of disaster. The new culture prospered from the start, but made severe demands upon the patience and intelligence of the settlers. During the same years in which the Greeley colonists were working out, by means of experiment and painful experience, the solution of agricultural problems for Colorado, the Riverside colonists were performing precisely the same service for southern California. The skill and the enterprise which the one people applied to potatoes, the other applied to oranges, with the same high results. The Riverside colonists not only exhausted their own sources of information on the subject of citrus culture, but induced the State Department at Washington to make its consuls in semi-tropical countries their agents. In this way they were enabled to learn all that foreign horticulturists knew about the business. They made constant progress in improving the standard of their fruit, their most marked triumph in this direction being the production of the Washington navel, or seedless, orange. Their orchards represented all the choicest varieties, which were cultivated with the highest skill. The original colony tract of two thousand acres has been gradually extended until it includes ten thousand. The shipment of oranges has risen to over four thousand car loads annually, realizing a million and a half of dollars.

The projector of Riverside had framed his prospectus on the lines of co-operative effort. We have seen that the enterprise speedily became private and speculative in character. This result was mostly due to the necessity of using large capital for the initial development, and to the fact that the colony included a group of individuals who possessed considerable means. Possibly the same result might have occurred in Utah if the Mormon pioneers had not enjoyed a fortunate equality in the matter of poverty. In Utah there was no capital except labor and brains, and these admitted of no other form of enterprise than pure co-operation.

The speculative instinct which took possession of Riverside and ran a mad race through southern California, accomplished much good, as well as much evil. And in the end the pioneer orange colony returned very closely to the original ideal of its founder. The principal irrigation system became in time the property of the people, and the water-rights were inseparably associated with the land. The orange-growers also found it necessary to seek refuge from the rapacity of the commission system in the adoption of co-operation for the sale of their product. Hence, in the two most vital features of their industry —the watering of their lands and the handling of their crops — Riverside is fully realising to-day the hopes in which it was originally conceived. On the side of its social life it has never departed from its first ideal, and it is in this aspect that it may be studied to the best advantage.

The homes and avenues of this colony, which have been evolved from an inferior sheep pasture in less than a generation, are among the most beautiful in the world. In considering their widely celebrated charms, it should never be forgotten that these are the homes and surroundings of average people, and that they earn their living by tilling the soil. Making due allowance for climatic differences, there are equally beautiful residence districts in the suburbs of great eastern cities; but these belong to people who enjoy a degree of prosperity much above the average—to the small minority who are rich, or at least unusually well-to-do. They are not farmers, but business or professional men who have risen above the general level of society. At Riverside, on the other hand, at least ninety per cent. of the total population live in homes which front on beautiful boulevards, presenting to the passer an almost unbroken view of well-kept lawns, opulent flower-beds, and delicate shrubbery. Newspaper carriers canter through these streets delivering the local morning and evening dailies. Though this is a farming population, the homes are so close together that the people enjoy the convenience of free postal delivery. They fill their bath-tubs with water piped through the streets. They light their homes with electricity. In the centre of the colony they have fine stores, churches, hotels, and public halls. Their schools are of the highest standard, and are housed in buildings the beauty and convenience of which bespeak the good public taste. A well-patonized institution is the club-house and its reading-room. There is but a single saloon, and it is considered decidedly disreputable to frequent it.

The first result of the early colonies was to give a tremendous impetus to the settlement and development of southern California. The fruits of this new impulse are seen in the scores of charming communities which stretch eastward to the margin of the Colorado desert and southward to the border of Mexico. Redlands, Ontario, and Pomona are typical examples. The impressive city of Los Angeles, which grows alike in good times and in bad, is another product of the movement which traces back to the humble beginnings of these pioneer settlements established by a superior class of eastern emigrants. High land values and costly irrigation works have naturally resulted. But these are only the superficial evidences of economic forces which lie deeper, and which should be noted as the peculiar product of the colonial life of southern California.

The germ of Riverside, and of the civilization which it inaugurated in the San Bernardino Valley, is the small farm made possible by irrigation. This is alone responsible for the character of industrial and social institutions and of the people who sustain them. Where farms are very small—in Riverside they are from five to ten acres in size—they necessarily belong to the many. This means a class of small landed proprietors at the base of society. The condition is one which forbids the existence of a mass of servile labor like that which lives upon the cotton plantations of the South, and, to a greater or less extent, upon large farms everywhere, including the greater part of California itself. On a small farm the proprietary family does most of the work. Hence the main part of the population in such districts as Riverside is independent and self-employing.

The people of southern California are plainly moving along the line which leads to public ownership of public utilities and co-operative management of commercial affairs. But with them the movement is an economic growth rather than a political agitation. It is the logical outcome of their environment and necessities. A great body of producers and proprietors of the soil, they formerly stood between private irrigation systems, supplying the life-current of their fields, and private commission houses, furnishing the only outlet for their products. The condition was an intolerable one, since it made them utterly dependent upon agencies beyond their control. These instrumentalities the people are rapidly taking into their own hands, and it is inconceivable that they can ever again pass into private control. It is probable that California has seen almost the last of the attempts to establish the policy of private ownership of irrigation works, the most vital of all public utilities in arid regions. The system of co-operative fruit exchanges is carried forward by the same impulse. Already it handles more than half the enormous product. The producers have their own packing-houses, make cash advances to their members, and send their agents to represent them in distant markets.

It is pleasant to note that beautiful homes and high average prosperity have not spoiled the democratic simplicity of these communities. After the adjournment of the International Irrigation Congress at Los Angeles in 1893, its members enjoyed the hospitalities of many of the charming colonies in the neighborhood. In his remarks at a banquet tendered the party by the people of Santa Ana, Señor de Ybarrola, the representative of Mexico, paid a handsome compliment to the ladies who had waited upon the table. Afterwards one of the distinguished representatives of France remarked his surprise at hearing a public compliment to "the servants."

"What!" exclaimed Señor de Ybarrola, "did you think they were servants? Why, those were the leading ladies of Santa Ana."

"Do you mean to tell me," the French delegate demanded, in amazement, "that the leading ladies of Santa Ana put on aprons to serve strangers?"

"Certainly," the Mexican replied; "for in this country service is a title to respect."

The incident illustrates at once the hospitality and the equality which are characteristic of the social life of southern California.

CHAPTER IV

THE REVOLUTION ON THE PLAINS

THE semi-arid portion of the Great Plains constitutes a distinct division of the irrigation empire. Its history and its problems are peculiarly its own. During the last half century it has lived through three stirring and romantic epochs and entered upon a fourth. This last is one of absorbing human interest, and will doubtless shape the permanent civilization of the region.

When Francis Parkman and the Mormon pioneers traversed the country, late in the forties, it swarmed with herds of buffalo and tribes of hostile Indians. It was the era of savagery, broken only by the presence of a few frontier posts, which served as the occasional refuge of adventurers and hunters.

Almost miraculously the buffalo disappeared, and the red men retreated before the white wave which overflowed the western bank of the Mississippi and began gradually to people the eastern margin of the plains. Then the savagery of the desert suddenly gave way to the semi-barbarism of an epoch of cattle-kings and cowboys.

Just as the Indian and the trapper had surrendered to the cowboy and his herds, so the latter in their turn receded and largely disappeared before another element which now swiftly arose in the life of the Great Plains. The third era of American colonization, noted in a previous chapter, was yet at the stage of flood-tide. New railroads were pushing their iron highways westward across the prairie. Such *entrepôts* as Chicago, St. Paul, Omaha, and Kansas City were crowded with hopeful immigrants whose appetite for government land had been whetted by the stories of prosperity with which the newspapers teemed. Horace Greeley's famous injunction, "Go west, young man," still rang in the ears of ambitious youth and homeless middle-age. Land agents urged on the multitudes with a zeal born of the commissions on which it fed.

In the enthusiasm of the hour no one gave heed to the few croakers who hinted that there was somewhere a mysterious boundary-line beyond which all efforts at settlement must be disastrous. There was a theory that rainfall moved westward with population, and that the cultivation of the land wrought changes in climatic conditions. Under these circumstances it was not strange that the home-seeking hosts crossed the unknown boundary into the region of scant rainfall, and learned in hardship and bitterness the lessons which a more cautious and far-seeing government would have comprehended and taught to its children.

In the absence of such scientific determination of the conditions of the country, tens of thousands expended all their money and the most precious years of their lives in discovering what could *not* be done in the semi-arid region. The crushing and pathetic truth that nature had denied sufficient rainfall for the production of crops in a region where a multitude of people had made their homes dawned slowly upon the public mind, and the conclusion was stubbornly resisted.

Between the acknowledgment of this fact and the beginning of practical efforts looking to the use of irrigation, there was a brief but exciting intermediate stage in which high hopes were built upon the possibility of precipitating rain by artificial means. An Australian genius suddenly appeared with a mysterious prescription warranted to assemble clouds in a clear sky and compel them to weep in the shape of copious showers. The end of this undertaking was the failure of the experiment and the suicide of the inventor. One of the railways discovered another wizard with another prescription, and hauled his special car over the entire length of its line, promising showers on regular schedule time. Even the Agricultural Department at Washington expended several thousand dollars in experiments in this direction. In this case, however, there was no mystery about the method adopted. It was the use of powerful explosives to be discharged at a high elevation. As nobody denied that heavy showers frequently followed great battles, and that it generally rained on the night of the Fourth of July, there were high hopes for the success of this undertaking, which occurred on an elaborate scale in Texas. Secretary Rusk described the preparations in detail, and summarized the outcome in the sententious remark: "The result was—a loud noise!" The theory exploded with the dynamite and disappeared from the minds of men with the last reverberation on the Texas prairies.

The mysterious line which divides the region of fairly reliable rainfall from the land of sunshine has been discovered at last and generally accepted. This, as stated before, is the ninety-seventh meridian west from Greenwich. It divides the United States almost exactly into halves, running through the middle of North Dakota, South Dakota, Nebraska, Kansas, Indian Territory, and Texas. The vast territory lying between this meridian and the foothills of the Rockies, bounded on the north by Canada and on the south by Mexico, is the semi-arid region of the Great Plains. Over all this vast district the tide of settlement had flowed and ebbed again, as we have seen. It now awaits the full development of the fourth epoch in its eventful and romantic history. The character and extent of this development is governed by the nature of the water supply, which differs materially in the several States.

The utility of irrigation on the plains was revealed in a curious way. In Finney county, near the western border of Kansas, thousands of acres were planted to wheat in the summer of 1878, and it seemed the sanest of projects to build a grist-mill to grind the crop. This was undertaken near the Arkansas river by enterprising merchants in the neighboring community of Garden City, but the new institution began and ended with a mill-race. Before the building and machinery were required, the wheat had surrendered to dry air and hot winds. Not an acre of the crop was harvested. And yet the blighted seed was destined to bear another and far more fateful crop and the forgotten mill-race on the banks of the Arkansas to grind a grist that would prove historic.

A few settlers remained to rake amid the ashes of their ruined hopes. Among them was a man who had learned the methods of irrigation while living in California and Colorado. It happened that his land adjoined the abandoned mill-race, and he readily obtained the right to turn the water upon a part of his farm. The result, though not surprising to the practised irrigator, was a revelation to his thoroughly disheartened neighbors. The soil which produced nothing in the previous summer responded to the new method of cultivation with enormous crops of all varieties of products. In quality they surpassed anything previously grown in that region. As these facts became known a new hope arose, like a star in the night, against the dark background of past discouragements. The Garden City "experiment" became the Mecca of students of irrigation throughout the wide region devastated by the drought. The ruined crop of the previous year and the useless mill-race gave birth to an influence which in fifteen years has assumed far-reaching proportions.

Kansas is the mother of irrigation on the plains. When the people heard of the miracle wrought by the waters of the abandoned mill-race their optimism instantly foretold a better civilization than they had dreamed of. Irrigation began here with canal-building in the valley of the Arkansas river. For a time the work was prosecuted with remarkable vigor. As early as 1890 over four hundred miles of large canals had been built, at a cost of nearly three million dollars. But the industry came suddenly face to face with an unexpected and almost fatal obstacle.

The Arkansas river rises in the mountains of Colorado and waters a broad and fertile valley before crossing the boundary into Kansas. In the upper State enterprise was busy with the diversion of its waters.

In the absence of any regulation of interstate streams by national authority, the Colorado irrigators claimed the right to take the last drop of water for their own canals. This they proceeded to do during the growing season, leaving the canals of western Kansas as dry as its prairies. The investment of an English company in extensive works costing more than a million dollars was practically destroyed by this turn of affairs. There were many similar losses of less magnitude. It was at this stage that the lamented humorist "Bill Nye" remarked of some of the western rivers that "they are a mile wide and an inch thick—they have a large circulation, but very little influence."

When the Kansas irrigators found themselves deprived of their surface supplies they sought the underflow, and in the process of finding and utilizing it developed an entirely unique and very promising mode of irrigation.

The new experiment was first made at Garden City, within sight of the historic mill-race. It was found that in the Arkansas Valley water could be obtained by shallow wells ranging in depth from eight to twenty feet. This is raised by hundreds of wind-mills into hundreds of small reservoirs constructed at the highest point of each farm. The uniform eastward slope of the plains is seven feet to the mile. The indefatigable Kansas wind keeps the mills in active operation, and the reservoirs are always full of water, which is drawn off as it is required for purposes of irrigation. These small individual pumping-plants have certain advantages over the canal systems which prevail elsewhere. The irrigator has no entangling alliances with companies or co-operative associations, and is able to manage the water supply without deferring to the convenience of others, or yielding obedience to rules and regulations essential to the orderly administration of systems which supply large numbers of consumers. The original cost of such a plant, exclusive of the farmer's own labor in constructing his reservoirs and ditches, is two hundred dollars, and the plant suffices for ten acres. The farmer thus pays twenty dollars per acre (about double the average price paid to canal systems in this region) for a perpetual guaranty of sufficient "rain" to produce bountiful crops; but to this cost must be added two dollars per acre as the annual price of maintaining the system.

Farming under these conditions is limited to small areas, and intensive methods of cultivation become imperative. The result has been the evolution of a multitude of five-, ten-, and twenty-acre farms, each surrounded by its tall fringe of protecting cottonwoods, which inclose grounds variously planted to orchard, field, and garden. Perhaps these methods present a closer parallel to European agriculture than anything else found in this country, while the numerous windmills suggest comparison with Holland. Nowhere are there sharper contrasts than that which is presented by these green and fruitful farms, gleaming like islands of verdure upon the brown bosom of the far-stretching plains, which have been seared by the hot breath of rainless winds.

The uses of the artificial reservoirs are not limited to irrigation; they are usually stocked with fish, which multiply with surprising rapidity and enable the farmer to include this item of home produce in his bill of fare every day in the year. These fish are very tame, and in some cases actually trained to respond to the ringing of the dinner-bell, coming in scurrying shoals to fight for crumbs of bread thrown upon the water. (This fish story is a true one.) The reservoirs also yield a profitable crop of ice in the winter. When we compare the hardships and bitterness of this locality but a few years since with the comfort and abundance which the infinitely smaller farms yield to-day, we behold anew the civilizing power of irrigation. The Starvation Belt has become a Land of Plenty.

The centre and inspiration of these developments is Garden City, capital of Finney county. What Greeley was to Colorado and Riverside to southern California, this little town has been to western Kansas. Perhaps no other small place on the plains suffered a more violent attack of "boom" than Garden City in the feverish times of the last decade. Certainly none has held with more tenacity to its confidence in the final outcome of the country or contributed more to the early vindication of its faith.

It is difficult to estimate the reasonable possibilities of windmill irrigation in Kansas. There are enthusiasts who insist that the industry will be extended to nearly every acre, uplands as well as valleys. There are pessimists who assert that the amount of land reclaimable by such means is relatively very small. Of this subject the conservative hydrographer of the United States Geological Survey, Mr. Frederick Haynes Newell, speaks as follows:

"The existence of the subsurface waters of the river valleys of western Kansas has long been known. Like every other natural resource, its importance, at one time little recognized, has been seized upon by the so-called "boomers" and exaggerated to the extent of creating distrust and depreciation. It is, however, one of the most important of the natural advantages of the State, and one upon which the foundations of prosperity must be carefully laid. By a thorough employment of the underground waters, with the best methods, much of the vacant land of the State will be utilized for agriculture, and the remainder can become a source of revenue, indirectly at least. Taking the Arkansas Valley as best illustrating these conditions, the general statement may be made that water can be had everywhere within the valley at moderate depths, and in quantities such as to be inexhaustible to ordinary pumping machinery if properly installed."

Referring to the very much larger territory lying outside of the river valleys, the same authority says:

"In the portions of western and central Kansas where wells cannot be obtained at moderate depth, it will probably be practicable to store considerable volumes of water by closing the outlets of natural depressions. Favorable localities, although somewhat rare, can be found in nearly every county, and by the proper construction of substantial earth-dams considerable volumes of water can be held for use upon the lower lands. In one instance at least water thus stored has been pumped for use upon an orchard, and the success attained in this way should induce others to try similar devices."

The drought of 1890 made Nebraska one of the important irrigation States of the West. Canals had been built on the North Platte river near the Wyoming boundary, several years earlier, but the irrigation industry had won no general recognition. Thousands of farmers were persisting in the delusive hope of rainfall farming, and public sentiment was distinctly opposed to those who sought to include Nebraska in the arid region.

All this was changed by the events of 1890. In that year crops were ruined by dry weather and hot winds throughout a large part of the State, and the people in the western counties generally acknowledged that it was useless to longer persist in the effort to cultivate the soil without artificial moisture. Strangely enough, they seemed to draw a new inspiration from their blighted fields. Irrigation conventions were held at many county seats. The study of water resources, of methods and laws essential to their utilization, became earnest and general. The popular agitation rapidly crystallized into a permanent and organized movement which has gathered strength with each passing year. Comprehensive laws were enacted by the legislature and the office of State Engineer created. Meanwhile, large amounts of private capital were invested, many canals constructed, and the despised western counties began to rise in public esteem.

It is now clearly apparent that the very lands which refused to yield a return for the industry of the first settlers will sustain the densest population in the future and give the most absolute assurance of permanent prosperity. Already the time has come when a State irrigation fair can be held in western Nebraska and make a striking exhibition of results, and when a commonwealth which ten years ago resented as a libel the intimation that its rainfall was deficient, can proudly claim to rank among the greatest of irrigation States. The transformation which has occurred in public opinion is no less striking than that of the agricultural industry itself.

The State is more fortunate than some of its neighbors in the character and extent of its water supplies. Over its western boundary the North Platte pours a perennial stream of considerable volume, which feeds a number of large canals. The surface flow of the South Platte is mostly absorbed in Colorado, but when the two forks are united in Lincoln county they make a river of respectable proportions, which flows through the heart of the State and furnishes water both from its surface flow and from its gravel bed. The Loup river further increases the irrigation facilities in the central counties. In the southwestern part of the State the Republican and its tributaries supply a number of quite extensive irrigation systems. Along the northwestern boundary the Niobrara, a noble stream, is beginning to be utilized.

The conformation of the land in western Nebraska also offers more favorable opportunities for the storage of flood waters than are found in most of the prairie States. The possibility of irrigation from wells by means of pumps driven by windmills and by steam and gasoline engines, are also being thoroughly tested, with hopeful results. The experts of the Geological Survey report that even away from the river valleys, where the depth to water is considerable, small farms can be irrigated by this means at most points. This conservative authority estimates that fully one million and a half of acres can be irrigated in western Nebraska. Local enthusiasts put the amount very much higher, but even the former figure represents a reclaimed area three times greater than that on which the wonderful agricultural industry of Utah has been developed.

The Dakotas are comparatively well watered by surface streams, but they flow in deep channels, and the uniform slope of the land to the eastward is only about one foot to the mile. Under these conditions it is not practicable to divert the flow by gravity canals, though it is sometimes done with the aid of pumping machinery. But the Dakotas rejoice in the possession of great artesian basins and of some of the largest flowing wells in the world. Many of them are one thousand feet in depth, and some of them furnish the remarkable flow of four thousand gallons per minute. Over sixteen hundred artesian wells were reported in these two States as early as 1891, and the number has constantly increased. The irrigation sentiment has been well organized and has resulted in the provision of progressive legislation.

Texas was also a severe sufferer from drought throughout the western part of its vast territory. The greater portion of it is well watered by rivers, by large perennial springs, and by artesian wells second only to those of Dakota. Here the people have also responded with high public spirit to the appeals of the irrigation champions, and the new era in the industrial life of the State is well under way.

The actual amount of land that may be reclaimed and cultivated in the semi-arid region furnishes no measure of the value of irrigation to this vast district. By enabling thousands to engage in farming, irrigation has made it possible to use the surrounding plains as the pasture for great numbers of beef cattle. In many instances small herds are owned by the farmers themselves, but to a large extent their crops are bought by those whose sole business is cattle-raising. Thus all the resources of the region are brought into use, and a wonderful prosperity has followed as the logical result.

From Canada to Mexico the revolution on the Great Plains is now in full tide. It is the most dramatic page in the history of American irrigation. It has saved an enormous district from lapsing into a condition of semi-barbarism. It has not only made human life secure, but revolutionized the industrial and social economy of the locality.

To a considerable extent it has replaced the quarter-section with the small farm and the single crop with diversified cultivation. It has transformed the speculative instincts of the people into a spirit of sober industrialism. It has raised the standard of living and improved the character of homes. It has planted the rose-bush and the pansies where only the sunflower cast its shadows, and it has twined the ivy and the honeysuckle over doors which formerly knew not the touch of beauty. It has made neighbors and society where once there were loneliness and heart-hunger. It has broken the chains of hopeless mortgages and crowned industry with independence.

Part Third

UNDEVELOPED AMERICA

"Mighty as has been our past, our resources have just been touched upon, and there is wealth beyond the Mississippi which, in the not distant future, will astonish even the dwellers on the shores of Lake Michigan.

"From the time my eyes first rested on the great uncultivated plains which lie between the Mississippi and the Pacific Ocean, my wakening dreams have been filled with visions of the incalculable wealth which the touch of living water will bring to life from those voiceless deserts. There wealth only can produce wealth, and man, singly and alone, might as well try to subdue the Himalayas as to cope with these wastes; but the hand of *united and associated* man is already reaching forth to grasp the great results.

"The same power which wastes millions on the Mississippi can be utilized to make the desert blossom with the homes of men, for whom and for all of us the now blighted soil will bring forth the fruits of the Garden of Eden."—HON. THOMAS B. REED, *in a speech at Pittsburg*, 1894.

CHAPTER I

THE TRUTH ABOUT CALIFORNIA

CALIFORNIA is widely celebrated, but little known. Its unique climate and productions, and the dramatic incidents of its early history, have been deeply impressed upon the popular imagination wherever the name of the Republic is spoken. These circumstances have given it rank among the most famous of American States; yet its problems and its future are inscrutable enigmas to all who have not studied the subject at close range, and to many who have. The anomaly that one of the States most talked of should be one of the least understood is not difficult to explain.

In the first place, California is known not by what millions of people have seen, but by what millions have read. Europe is better known by contact to Americans than California. A prominent American orator recently "discovered" California, and filled the newspapers with the interesting and suggestive impressions it had made upon his mind. He had been to Europe twenty times, and to the Pacific coast once, which is once oftener than many other distinguished travellers of the eastern seaboard.

Still further, the Anglo-Saxon race is dealing with new conditions in California. Coming from dense forests, from a land of heavy rainfall, and from a temperate climate where winters are long and stern, it settled in treeless deserts, in a land of slight and peculiar rainfall, and under a sky that never knows the winter.

Finally, California is in its infancy, having recently celebrated its forty-sixth birthday as an American commonwealth. Born in a paroxysm of speculation—one of the wildest the world has seen—it has outlived a trying experience of lesser economic epilepsy, and come to the threshold of its true career strengthened and purified by the extraordinary process. In less than half a century several far-reaching changes have swept through the industrial and social life of the State, swiftly altering the conditions of labor and of business. Even for those living in the midst of these events it has been difficult to read their significance and estimate their influence on the ultimate character of the place and people.

What wonder, then, that to the outside world California has meantime appeared like a jumble of gold, palms, and oranges, of gilded millionaires and hopeless paupers, of enviable farmers living luxuriously on small sections of paradise, and of servile alien laborers herded in stifling tenements? Such are the conflicting aspects of the Golden State to those who view it from afar. What are the facts?

The literature of California is prolific. Perhaps no other locality in the United States has been so often written about. In dealing with a place which presents so many strange and fascinating features it is easy for praise to become extravagance. This is now so well understood that it is commonly thought that the words "Californian" and "veracity" are seldom synonymous. But the truth is that visitors from abroad have contributed rather more than Californians themselves to the popular impression of the State and its wonders. It is the fleeting tourist rather than the permanent resident who becomes the more reckless partisan of the charming climate, the majestic scenery, and the vast resources which, to his exhilarated imagination, seem certain to burst into their full potentiality in the immediate future.

Without doubt, the most influential books ever written about California were those of Mr. Charles Nordhoff. His *California: for Health, Pleasure, and Residence* (1873), and *Northern California* (1874), had a great vogue at the time of their publication, and for many years after. They are as fresh and readable to-day as when written, and it is easy to understand why they should have exercised so powerful an influence in making public opinion. Mr. Nordhoff should not be confounded with the superficial enthusiasts who study the country only from car-windows and the verandas of luxurious hotels. Addressing his books "to travellers and settlers," he evidently realized the grave responsibility of the undertaking, and made a conscientious effort to describe the situation faithfully and conservatively. To keen observation, and a clear, vivid, descriptive style, he added a shrewd common-sense, which enabled him to divine, with striking accuracy, several important economic facts which the residents themselves overlooked or ignored. He went thoroughly over and into the country, accepting no facts at second-hand which it was possible for him to verify by personal investigation.

Nevertheless, he wrote as a tourist-correspondent, and is first among those of that class who have given California the place it holds in the popular imagination.

Looking back now to his studies and the deductions he drew from them, it is interesting to note how conditions have changed in twenty-five years, and to what extent his words of advice require revision before they can be offered to the settler of to-day.

When Mr. Nordhoff wrote his books cattle and cattlemen were just beginning sullenly to recede before the rising tide of agriculturists in the great San Joaquin Valley. He correctly foretold the first effects of the industrial revolution that would follow, predicting that the railroad and the public lands, and, later, the old Spanish grants, would be divided among farmers; that the cattle would be compelled to seek the mountains for free range, and would come into the valleys only to be fattened upon alfalfa and other crops. But he foresaw only the first effects of these changes, and the farmer who should proceed upon his advice to-day would certainly fail to prosper.

Mr. Nordhoff championed the cause of the small farmer against the great landowner, but his idea of a small farmer is widely different from the present significance of the term. He saw in the San Joaquin "cheap farms for millions." These were to be acquired, either from the railroad or the government, in tracts ranging from one hundred and sixty to six hundred and forty acres. This was what he meant by "small farms," and they were small, indeed, compared with the great ranches of thousands or tens of thousands of acres. But they were still of quite imperial dimensions compared with the unit of ten, twenty, or thirty acres which is now considered amply sufficient for the settler's needs.

While Mr. Nordhoff recognised the advantage of irrigation, he did not appreciate its actual importance, nor did he realize how largely it would increase the cost of land and how seriously it would influence the entire economic character of the country. He held out the hope of a prosperous living for families of small means who should settle upon farms of one hundred and sixty acres and upwards in the San Joaquin Valley, and depend chiefly upon crops that could be grown without irrigation. If "the millions" had accepted this advice in the past, or should do so to-day, nothing but disaster could result. Except in a few localities, prosperous agriculture in the San Joaquin Valley without irrigation is impossible. The character of the country is such that large and costly canal systems are required to bring any considerable portion of it under water. When these were built it was no longer possible to acquire cheap land, and the size of the practicable farm unit had been reduced to about one-tenth of the amount Mr. Nordhoff advised. These developments changed the situation completely.

The enthusiastic author was by no means blind to the possibilities of horticulture, nor did he fail to foresee that when this had been established it could be successfully pursued on much smaller areas. But here also his advice is now quite obsolete, and must be revised before it can again be offered to the public. He left the impression that oranges could be grown throughout southern California and the San Joaquin Valley. Later experience has eliminated the dream of orange orchards from a vast portion of these localities, but has demonstrated that the industry is practicable in some places where it was formerly supposed to be out of the question. While the orange-tree will grow and generally bear fruit throughout the lower valleys, the area in which it can successfully be cultivated for commercial purposes is rather severely restricted. To grow a few orange-trees within the shelter of the house, and to produce sufficient fruit for home purposes, is one thing; to grow thousands of acres of oranges fit for the market, and thus develop a genuine citrus district, is entirely different. There is a well-recognized thermal belt in the foothills of the Sierras, bordering the San Joaquin and Sacramento valleys, but the conditions of the country, as a whole, with reference to this subject, have turned out to be very different from what they were supposed to be when Mr. Nordhoff wrote his books. In southern California his predictions in regard to orange culture have been largely realized, but even there it has been discovered that the field is limited.

The author was not unnaturally led into the error of saying that "the seasons are a little later in the North" than in the South. The contrary is the case, strange as it may seem, for it is the northern fruit districts which send the earliest products to market. This is true of both deciduous and citrus fruits. In the case of the latter the difference is very striking, as the northern oranges are ready for the Thanksgiving market, while comparatively little of the southern crop is available for Christmas purposes. Both the raisin and the prune industries were beginning to assume importance in 1873. Mr. Nordhoff quoted raisins at "two dollars per box of twenty-five pounds," and added: "I judge from the testimony of different persons that at seven cents per pound raisins will pay the farmer very well." To-day they are quite content to obtain three cents. He quoted prunes as bringing from twenty to twenty-two cents at wholesale at San Francisco, "and even as high as thirty cents for best quality." Prunes now bring from three to eight cents, and pay well at four and a half. Figs were then selling at from five to ten cents per pound, and the author thought they would be very profitable. The result has proved that while figs bear most prolific crops they are not profitable, as Californians have not yet been able to cure and pack them successfully. There are exceptions to the rule, but this is true as a general statement, and the fig is not a profitable article of commerce in California. In much the same way tobacco-culture failed and disappointed the hopes which had been built upon that industry.

These are instances of many particulars in which even the most painstaking of works on California require revision in the light of experience. So, too, the public opinion which they helped to make must be revised. Mr. Nordhoff described California as it looked and as it seemed to promise in 1873. While his methods were conscientious, his tone was one of intense enthusiasm. His vision extended as far as any one's could do at that time. The fact is that at that stage of its history California had not begun to develop its real and enduring economic traits as it has done during the past few years. It had recently emerged from an era of wild speculation. It stood upon the verge of another, in which railroads and agriculture, rather than gold, were to be the principal factors. It is from the calm sea-level of these quiet days that the State may best take its bearings. Thus the time is ripe for a new study of what in many respects is the most wonderful of American States.

The great farmer of California is the successor of the gold-hunter. Both were speculators of the thoroughbred type; both looked with contempt upon the matter of making a living, and dreamed only of making a fortune. Of homes and institutions they were neither architects nor builders, for they sought only to take the wealth from the soil and spend it elsewhere. The miner leaves nothing to commemorate the place where he gathered gold save crumbling hovels and empty tin cans. The five-thousand-acre wheat-farmer leaves no monument beyond fields of repulsive stubble and the shanties of his "hoboes." These social forces belong to barbarism rather than to civilization.

Mr. Nordhoff clearly perceived these things, and not only urged the importance of smaller farms, but that farmers should be encouraged to diversify their products and become independent on their own places. But the conditions were yet too favorable for speculation. Wheat commanded more than one dollar per bushel. Of the new products, such as raisins, prunes, and oranges, the output was slight, and the prices consequently high. The result was inevitable. The owners of large farms sought to buy more land and increase the scale of their operations. The new settlers acquired as much land as they could, while the growing class of horticulturists planted their property exclusively to the few kinds of trees or vines which seemed most profitable at that time. Writing of this subject Mr. T. S. Van Dyke says: "The general principle upon which all farming was done, from the highest to the lowest, was very nearly this: Do nothing yourself that you can hire any one else to do, make no machinery at home, and raise nothing to eat that you can buy."

The rise of horticulture brought no material change in these conditions. As with the miner and wheat-farmer, so with the fruit-grower the aim was to get rich quickly, and the method speculation. Certain districts were devoted exclusively to prunes, others to wine grapes, others to raisins, and yet others to oranges. Fruit-land rose to almost fabulous prices, and was readily bought by those who had been taught to believe that they could realize profits ranging from one hundred to one thousand dollars per acre for certain crops. Exceptional instances justified this prediction, and everybody seemed to prefer to found expectations upon these instances rather than upon average returns. It is not difficult to understand why a man who counts upon an income of five to ten thousand dollars from ten acres, or double that amount from twenty acres, should turn his back upon common things, and devote his land exclusively to the crops which promise such gilded profits.

This was the general policy, and it conferred great prosperity upon some classes, particularly the Chinese and Italian market-gardeners, who raised food for the gentlemen-farmers to eat. There were years, however, when the fruit of trees and vines brought very large returns. Wherever the policy of single crops is pursued, whether it be wheat, corn, or cotton, raisins, prunes, or oranges, there are occasional years of well-nigh riotous prosperity. But such years are frequently more disastrous in their results than sober periods of depression. They feed the flame of speculation and raise false industrial ideals. Under the spell of such times, the people depart still further from the safe path of self-sufficient agriculture, buying more land to devote to the favorite crop, expanding their living expenses, and running into debt. When this spirit becomes the breath of industry no human laws can avert disaster.

A true industrial system is like a noble river fed by eternal snows: it never floods its banks with an excessive flow, and never sinks below its normal stage. It ebbs and flows with the regular tides of the great commercial ocean to which it is tributary, but alike at high water and at low, it bears the ships of men upon its tranquil bosom.

After a very intimate acquaintance with California horticulture, and with the army of producers who have engaged in it, Mr. Edward F. Adams, formerly manager of the State Fruit Exchange, wrote as follows:

"Unless certain reforms in the trade can be effected, there is danger that a large portion of the capital will be lost. The mortgage indebtedness is very serious; the general depression in values has temporarily wiped out the equities of the nominal owners; and while a partial recovery is doubtless to be expected in due time, it is not believed by the best informed that under present conditions of marketing, our orchards and vineyards can continue to maintain those who occupy them in their present standard of comfort. We are endeavoring by a general popular movement to remove the evils which oppress us."

Notwithstanding such warnings as this, and the sore experience on which they are based, there are real-estate interests which still advertise the fabulous profits of California fruit-culture, and there are many who believe them and proceed to organize their farms in the old way.

The evolutionary process of the last twenty years has wrought out some very valuable lessons for the future of California. It has demonstrated that irrigation is essential to the highest standard of civilization. The census of 1890 revealed the fact that two-thirds of the gain in rural population stood to the credit of eight counties where irrigation prevailed. The counties which rely upon rainfall had about reached a stand-still or scored a loss. The people have always been divided on the question as to whether irrigation is necessary. Those who oppose urge that it breeds malaria and injures the quality of the fruit. Those who favor insist that it is essential to the most scientific agriculture, and to the maintenance of dense population. The last twenty years have answered the question forever. The answer consists of a comparison between the South and the North. The one was born of the irrigation canal; the other of the mining-camp and the wheat-ranch. The one is characterized by a high civilization; the other by a low one.

With a population estimated by Governor Budd, in 1896, at less than one million and a quarter, California has a territory nearly as large as that of France. It is inferior to France neither in climate, soil, natural resources, nor sea-coast, and its capacity for sustaining a dense population is fully as great as that of the European republic. The latter supports more than thirty-eight millions. If, then, the comparatively few inhabitants of the California of to-day are not equally prosperous, it is because they have failed to make the best use of their opportunities. With the same rate of increase in the next century as in that of the immediate past, the United States will contain in 1996 a total population of over five hundred and eighty millions. Nothing is more certain than that California must receive its full share of these future millions. It seems hardly less certain that they will realize there the highest destiny of the race. But how?

Notwithstanding the supreme attractions of its rural life, more than seventy-seven per cent. of California's total increase in the last decade covered by the national census settled in towns and cities. As a result, the urban life of this far, new State is as badly congested as that of the old communities of the East. But the possibilities of agriculture, of manufacture, and of mining are relatively untouched. Ultimate California remains to be fashioned from these undeveloped materials. The tendencies of future growth are revealed by the teaching of the past, and not less by its failures than by its successes—not less by the fury of old speculations than by the calm current of these saner times.

The future tides of population in the Golden State must first spend their energy upon the soil. It is the creation of a new and ampler civilization that is involved, and agriculture must be its foundation. But if those now engaged in cultivating the soil can scarcely maintain themselves, what hope is there for new recruits in the industry? The question is natural, but the answer is conclusive. There is no hope for them if they engage in speculation, but there is an absolute guaranty of a living and a competence, to be enjoyed under the most satisfying and ennobling social conditions, if they work upon sound industrial lines. These lines are clearly disclosed by the light of past experience.

Three classes of products should enter into the calculations of the new settler in California: the things he consumes; the things California now imports from eastern States and foreign countries; the things which eastern communities consume, but can never hope to produce, and of which California possesses virtually a monopoly. In the first list is almost everything which would appear in an elaborate dinner menu, from the course of olives to the course of oranges, nuts, and raisins, and excluding only the coffee. This policy of self-sustenance has been ignored to a startling degree in the mad struggle for riches, but the coming millions of farmers can be sure of a luxurious living only by stooping to collect it from the soil.

In the second list are many of the commonest articles of consumption, which California might readily produce at home, but for which it sends millions of dollars abroad each year. The imports of pork and its products range as high as eight or ten millions each year. Condensed milk is not only a very important article of consumption in mining-camps and great ranches, but is largely shipped abroad for the Asiatic trade. It is brought across the continent from New Jersey. California also sends beyond its borders from twenty to twenty-five millions annually for the item of sugar, which should not only be produced in sufficient quantities to supply consumption, but for export as well. It is a curious fact that many of the finest fruit preserves sold in San Francisco bear French and Italian labels, and that the supply of canned sweet corn comes mostly from Maine. Essential oils made from the peelings of citrus fruits are also imported. It is not uncommon to find orange marmalade which has been prepared in Rochester, New York, the oranges having been shipped eastward, and the manufactured product westward, at the cost of two transcontinental freights. Imports are by no means confined to things which require capital and machinery for their manufacture. Chickens, turkeys, and eggs are largely brought from outside. A single commission-house in San Francisco imports five hundred thousand chickens every year. Thus a good many thousands of the new settlers can profitably be employed in feeding much of the present population of the State, which includes a large proportion of those who are speculating on wheat and fruit, sheep, cattle, and hogs.

Having made perfectly sure of his living, and disposed of his surplus for cash in the home market, the settler still has left a promising field in the list of things which nine-tenths of the American people consume but cannot produce. Among these products are oranges, lemons, and limes. Florida competition in this line has been temporarily destroyed, if not permanently injured. Mexico is, perhaps, a rising competitor; but there is little reason to fear that California cannot hold its own against all foreign producers. Even more promising is the olive-culture; for while the orange is an article of luxury, the olive must ultimately become here as elsewhere an important article of food. Californians are just beginning to pickle the ripe olives. The difference between a green olive and a ripe one is precisely the difference between a green and a ripe apple. In Spain the people subsist largely on olives—but not on green ones. All who have eaten the ripe fruit which is now being pickled in California will agree that it is conservative to say that when the American public become acquainted with this product, its consumption will be enormously increased. This will be true, because in its new form the olive is as nutritious as it is palatable, and the people will learn to depend upon it as an article of diet. In the production of deciduous fruits, such as peaches, apricots, cherries, and nectarines, California has much competition, and is to have much more in the future. There are irrigated valleys throughout the Pacific Northwest, the intermountain region, and the now undeveloped Southwest, which are beginning to produce marvellous fruits of this kind. The same is true of olives, almonds, and walnuts in a much more restricted way. The California wine industry is promising to-day, and the culture of grapes for this purpose profitable. Planters who depend for their entire income upon the cultivation of these export crops will necessarily suffer all the evils of speculative farming, but those who have founded their industry upon the plan of self-sufficiency will always have a surplus income from this third source, and in years of high prices it will be large. It is thus that the agricultural basis of California will be indefinitely broadened in order to sustain future millions.

Upon this foundation manufactures, mining, and an enlarged commerce will rest. The first cannot be long delayed. California will not permanently endure the enormous waste involved in shipping its wool and hides across the continent to Eastern mills, tanneries, and workshops, and in shipping back again the manufactured cloth and shoes. The factories must inevitably grow up near the raw material and the consumers. Expediency and the economy of nature alike demand it. This important part of California's civilization remains almost wholly to be developed. Its growth will open new avenues for employment and new outlets for the products of the soil.

The mining industry is also in its youth. To use a common phrase, but a true one, "the surface of the ground has only been scratched." Old methods have been outlived, and the conditions of the industry are changing in vital ways ; but the work of taking gold and silver, copper, lead, and iron from the foot-hills and mountains of California has only been begun. The day of the individual miner, working with his pan in the gravel bed of the stream, is mostly passed. The conditions of hydraulic mining were materially altered by legislation because of the injury done by polluting the rivers and filling their channels ; but quartz-mining is in a state of rapid development, and is destined to assume prodigious proportions. It will add untold millions to the wealth of the community, increasing the demand for labor and widening the markets of the farmer.

Nature has unquestionably provided the foundation of a marvellous industrial life in which millions of people will finally participate. To-day these resources are undeveloped. There is but one force that can awaken the sleeping potentialities into a manifold and fruitful life. That force is human labor. Looking down the years of the future, it is possible to predict, with the accuracy of mathematics, that human labor will coin from these vacant valleys and rugged mountain-sides billions upon billions of money. The wealth to be so created will build many beautiful homes, capitalize banks, factories, and railroads, and send great steamships across the Pacific to foreign shores. To whom shall these things belong when labor has made them from the materials which nature provided? Upon the answer to that question hang the destinies of California.

The seed of the California of the past was in the little group of feverish gold-hunters who camped by Sutter's mill in 1849. It bore the gaudy weed of speculation, with its bitter harvest of misfortune and discontent for the many, accentuated only by the superfluous riches which it gave to the few. The seed of the California of the future is in the irrigation canals owned and administered by small landed proprietors; in the fruit exchanges, which are supplanting the commission system and securing to the producer the rewards of his labor; in the co-operative creameries and canning factories which, in the face of deficient capital and unfair competition, are slowly fighting their way to the sure ground of abiding prosperity; in the multitudinous and uniformly successful manufacturing and mercantile associations which Mormon genius has planted in the valleys of Utah; in the banks, insurance companies, and loan and building societies which, all over the Union and all over the world, have vindicated the possibilities of associated man.

It is interesting to consider what portions of California will receive the bulk of the future population. The topography of the State is peculiar and readily comprehended. The coast region presents a frontage of over one thousand miles to the sea, and is narrowly hemmed in by mountain ranges which, in many places, come down to the shore itself. But in these mountains there are many picturesque and fertile valleys which have long been applied to agricultural purposes. The coast region has a climate of its own. It is the mildest type of the temperate zone, closely verging upon the semi-tropical, but not adapted to the growth of citrus fruits. Here the rainfall is heavier than elsewhere in California, and proximity to the sea gives rise to frequent fogs. In the southern extremity of this region, from Santa Barbara to San Diego, the climate becomes genuinely semi-tropical and fogs are less common. North of San Francisco the leading industries are lumbering, dairying, stock-raising, and general farming, with some mining. In a few favored valleys fruit-raising on small farms is successfully followed. South of San Franciso the lumber and mining interests are insignificant, and the country is mostly devoted to dairy, stock, and general farming.

A most notable exception to what has been said of the general condition of the coast region is the Santa Clara Valley, which contributes enormously to the exports of the State. In the beauty of its homes and orchards and the excellence of its horticultural methods, in the organization of its fruit exchanges, and the character of its urban life and civic institutions, the Santa Clara Valley is fully equal to the most ideal localities in California, not even excepting the famous orange districts near Los Angeles. There are numerous opportunities in counties farther south, notably in Monterey, San Luis Obispo, and Santa Barbara, to apply the same methods with similar results. But while the Santa Clara Valley represents the finest possibilities of the coast region, it also strikingly illustrates certain failings in the economic system of the State which have been dwelt upon in earlier pages. Land is almost exclusively devoted to fruit. Farmers buy their milk, butter, eggs, poultry,

IRRIGATING SEVEN HUNDRED ACRES OF LEMON-TREES AT SAN DIEGO, CALIFORNIA

bacon, and fresh meats of others. They themselves produce none of the real necessities of life, but only the luxuries. One reason for this is the lack of irrigation. They have taught themselves to believe that this is not only unnecessary, but would actually be injurious to the quality of their fruit. They are learning gradually, however, that this idea is erroneous — that skilful and proper irrigation is always beneficial, and that artificial moisture is imperatively necessary to diversified production; hence, to the highest business prosperity and best social conditions. When this lesson is learned by the coast region as a whole a new era will set in, and great numbers of colonists will come.

What is popularly known as southern California is a narrowly restricted district reaching eastward from Los Angeles for about one hundred miles and southward to San Diego. Like the coast region, its character is fixed, though on widely different lines. Its population is already comparatively dense, and its future growth will be measured by the water supply for irrigation. While it would seem as if the water resources had been fully utilized, the fact is that large quantities run to waste in seasons of flood, and that the cultivable area can be gradually extended by storage works and more economical methods of irrigation.

It is an impressive fact that the seven counties of the south received sixty-one per cent. of the increase of rural population between 1880 and 1890. This marvellous showing was chiefly due to the superior public spirit of the locality, and to the attractive institutions which grew out of it. Los Angeles itself is the throbbing heart of a region which, in many respects, has no equal in the world. The leading characteristics of this locality have been referred to in another chapter. But the very success which attended these methods in the past place limitations upon the country as a field for future expansion. Land values have risen high, and the water supply has become almost as precious as gold. Health-seekers and the leisure class have been attracted in large numbers, and occupy the field which would otherwise be open to home-makers of smaller means. A class of wealthy people is a prominent feature of immigration in the southern valley. These opulent settlers plant orchards of oranges, lemons, and olives, just as their poorer neighbors do. It is reassuring to reflect, however, that they can accomplish little more with their abundant capital than humbler settlers may do with their united labor. The sun, the sky, the earth, and the waters will be as kind to one class as to the other. While it should not be inferred that none but the very rich can settle in the south, it is perfectly true that this charming district is not within the field of the largest future developments.

A district known as Antelope Valley is one of the later developments of southern California. This lies north of the Sierra Madre mountains, on the southern margin of the Mojave Desert. Irrigation has here begun to evolve orchards, fields, and beautiful homes from conditions which, in their virgin state, were peculiarly forbidding. A series of promising colonies, chiefly engaged in almond-culture, have been successfully established. But the amount of land that can be reclaimed in this locality is severely limited by the scanty water supply.

Where, then, is the field to accommodate the hosts who will come when the population of California begins to approximate that of France? It lies principally in four great and distinct bodies, which may be named, in the order of their importance, as follows: the Sacramento Valley, stretching north from the Bay of San Francisco to the feet of snowy Shasta; the San Joaquin Valley, reaching south from the great bay to the place where the two mountain-ranges meet at the pass of Tehachapi; the intermountain valleys on the eastern slope of the Sierra, extending over the boundary into Nevada; and the Colorado Desert, in the extreme southeastern part of the State, on the borders of Mexico.

The first of these, the valley of the Sacramento, received an addition of only two thousand to its rural population, out of a total of nearly ninety-seven thousand for the State, between 1880 and 1890. The fault lay neither with the soil nor the climate, which are equal to those of any part of California, but with economic conditions. The country is held in vast estates, principally devoted to the cultivation of grain, which has been a losing industry for several years. Where horticulture has been adopted it has frequently been done upon a great scale. The vast orchards and vineyards of Mrs. Stanford, of General Bidwell, and of A. T. Hatch are striking instances of this tendency. When General N. P. Chipman, himself a distinguished resident of the Sacramento Valley, called attention to the startling revelations contained in the census figures, the matter was widely discussed, but with little result. The public spirit which has given the southern counties their splendid place in the life of the Pacific coast is distinctly lacking in the north. The truth is that it cannot be cultivated on wheat-fields or in mining-camps. It comes with irrigation, with the subdivision of the land into thousands of diminutive holdings, with a citizenship composed of a multitude of small proprietors.

These conditions are exactly reversed in the northern valley, with pitiful results. The same forces would make the same civilization in both localities, for the physical foundation is practically identical. The southern valley lies open to the sea, the breezes from which mercifully temper the summer heat. In other respects the advantages are all on the side of the Sacramento. It is far greater in area; its water supplies are both more abundant and more reliable; its surrounding advantages, notably in the way of mines and timber, are much superior. Finally, it possesses the inestimable blessing of a mighty river, navigable for a distance of two hundred miles, and capable of being much improved. This is a factor of the highest import. It furnishes cheap transportation by boat, and materially lessens railroad charges. Furthermore, it gives the valley a comprehensive system of drainage from Shasta to the sea. The wonderful mineral riches of this locality will be rapidly developed. They are by no means confined to gold, but include a variety of natural riches. What has proven to be one of the greatest copper-mines in the world has recently been opened in Shasta county, with the aid of British capitalists. It is from the foot-hills on the eastern side of the Sacramento Valley that the earliest oranges and lemons seek the market. They command high prices, and are mostly sold on the coast from San Francisco to British Columbia. It is in this imperial valley, and in the foot-hills and mountains which rise above it in splendid pictures on each side, that a large proportion of the future millions will find homes and prosperity.

Irrigation is by no means absolutely necessary in the Sacramento Valley. If it had been, the story of its settlement and industrial progress would be different from what it is. No one could then truthfully assert, as now, that this splendid district contains less population than it had twenty-five years ago. Producing fair crops of grain and of deciduous fruits without artificial moisture, the country has been given over to large ranches and scattered orchards and wholly deprived of the powerful social influences which lent such distinction to the civilization of southern California. While irrigation is not indispensable in the north, it is essential to the best and highest results, especially in the line of small-farming. The rainless season usually extends from May until November. Without irrigation there can be no beautiful lawns, successive crops of vegetables and small fruits, or goodly yields of alfalfa. One acre under reliable irrigation is more valuable, for the purpose of small, diversified farming, than ten acres without it. The citrus fruits cannot profitably be cultivated except by irrigation, and there is no fruit which is not improved, both in quality and quantity, by the proper application of water. This claim is often stoutly disputed, particularly by those wishing to sell land that cannot be irrigated. But experience has taught that northern California can only hope to equal the southern part of the State by imitating its industrial methods, of which irrigation is the foremost.

The San Joaquin Valley is even larger, and in many respects resembles its northern sister. Indeed, the conditions of soil, climate, and productions are so nearly identical that they need not be rehearsed. Here irrigation and the small farm had begun to make themselves felt, and the single county of Fresno gained more than five times as much in population in the last census decade as the entire Sacramento Valley. Perhaps the earliest triumph of the new woman in this generation was that of Miss Austin and her three associates—all school-teachers of San Francisco—who founded the wonderful Fresno raisin industry. Investing their savings in a ranch, and then boldly venturing upon a culture in which few had faith, they demonstrated that raisins equal to those of Spain could be produced in the San Joaquin. They were rewarded with handsome profits, and later thousands of people shared in the benefits of their demonstration. But speculation and the fallacy of the single crop followed as natural consequences, bringing hard times, mortgages, and disappointment in their train. In the mean time unskilful irrigation without proper drainage wrought harm in various ways. All of these misfortunes are being overcome, but it is not easy for the great valley to undo the injury which its reputation has suffered in the last few years. Nevertheless, the country of the San Joaquin contains great possibilities, and will sustain a dense population. Its contiguous mountains are richly endowed with mines and great timber, as well as with the sublimest scenery. Among its valuable resources are artesian wells of large size, so situated as to be available for use in irrigation.

The valleys of the Sacramento and San Joaquin have been, and are yet, the grain-fields of the Pacific coast. Many of their residents have bemoaned the fall in the price of wheat as the greatest of calamities. The truth is that for California it is the first of blessings. The fall in wheat prices has broken the land monopoly which kept labor servile and gave the most fruitful of countries to four-footed beasts rather than to men. Not until nearly all great ranches had been mortgaged to their full capacity, not until the failure of prices had made the debts intolerably burdensome and brought their owners face to face with disaster, was it possible to open the country for its best and highest uses. With the supremacy of wheat will go the shanty and the "hobo" laborer, to be followed in time by the Chinaman. In their places will come the home and the man who works for himself. Civilization will bloom where barbarism has blighted the land. There are localities where the cultivation of grain can be pursued, but the semi-tropical valleys of California were plainly intended for better things.

Irrigation, drainage, and cheap transportation are closely related as economic problems in the great interior valleys. William Hammond Hall, the former State engineer, has predicted that within fifty years the waters which rise in the mountains and meander through these valleys to the sea will all be utilized to moisten and fertilize the soil, and then be turned into canals, serving the double purpose of drainage and transportation. He claims that it is feasible, from an engineering stand-point, to construct such works, and to propel trains of freight-boats by electricity at a speed of six miles an hour. If this shall be done, the gain to the State will be beyond all calculation, provided the works be owned by the public. It is by no means an idle dream when considered in connection with ultimate California.

The third field for future development is a vast region lying upon the eastern slope of the Sierra Nevada. This is so little known to the outside world that it may almost be named as Undiscovered California. It is reached only by lines of narrow-gauge railway running northwest and southwest, respectively, from Reno, Nevada. The northerly district is included in the three great counties of Plumas, Lassen, and Modoc. The country is distinctly arid, lying upon the western flank of the great basin formed by the Sierra Nevada and Wasatch ranges, which inclose portions of California, Idaho, and Utah, and all of Nevada. Here we find the real sage-brush desert—fertile, well-watered valleys surrounded by all the wealth of forest, mine, and natural pastures. The climate approximates much more nearly to that of New Mexico than to that commonly associated with the name of California. It is of the milder type of the temperate zone, favorable to the growth of such hardy fruits as apples, pears, peaches, and prunes. Up to this time, however, the chief products of the country are native and alfalfa hay, cattle, sheep, and horses. The sparse population is, perhaps, as prosperous as any farming community in the United States. This fact is mostly due to the vast extent of fine grazing lands surrounding irrigated valleys and to the herds of cattle and sheep which find their way to the farmers' hay-stacks from the ranges of northern California, southern Oregon, and western Nevada every autumn and winter.

The most important district in this region is Honey Lake Valley, lying eighty miles northwest of Reno. Here a new era has set in with water-storage for irrigation, small farms, and colonies planned upon the best ideals.

Cheap land, valuable surrounding resources, and a climate similar to that in which our race has flourished best, would seem to combine in favoring a large and rapid future growth.

The more southern body east of the Sierras lies chiefly in Inyo county. This is also at the early stage of development. The climate is milder, though still temperate rather than semi-tropical, than in the more northern counties. There are many beautiful valleys and an abundance of water, timber, and minerals.

Lack of railroad facilities and remoteness from large cities account for the backwardness of development in these attractive regions on the eastern slope of the mountains. They present to-day the finest field for development in California, and one of the finest in the United States. There can be no question that during the next century they will become the homes of hundreds of thousands of people and the seat of a manifold industrial life.

The fourth field open to future conquest is the Colorado Desert—most famous of waste-places in America. It is popularly regarded as an empire of hopeless sterility, the silence of which will never be broken by the voices of men. As the transcontinental traveller views it from his flying train it presents an aspect indeed forbidding. Neither animal life nor human habitation breaks its level monotony. It stretches from mountain-range to mountain-range, a brown waste of dry and barren soil. And yet it only awaits the touch of water and of labor to awaken into opulent life. Only the most superficial view of it is caught from the passing trains, while those who have penetrated into its heart and across the boundary into Mexico compose but a slender list of prospectors, hunters, surveyors, and curious travellers. But some of these have made careful studies, and this really wonderful country is beginning to attract the attention of both capitalists and settlers, though the former must do their work before the latter can hope to occupy the land.

Much time will be required to overcome the wide and ingrained public prejudice against the Colorado Desert, but it will finally be reclaimed and sustain tens of thousands of prosperous people. It is more like Syria than any other part of the United States, and the daring imagination may readily conceive that here a new Damascus will arise more beautiful than that of old.

With the occupation of the Colorado Desert and of the great peninsula which adjoins it, a powerful impulse will be given to agriculture, mining, and commerce in a vast region now little peopled. One of the inevitable consequences will be the rise of San Diego to the proportions of a large city—probably the largest in the southern part of the coast.

The future of California will be very different from its past. It has been the land of large things—of large estates, of large enterprises, of large fortunes. Under another form of government it would have developed a feudal system, with a landed aristocracy resting on a basis of servile labor. These were its plain tendencies years ago, when somebody coined the epigram, "California is the rich man's paradise and the poor man's hell." But later developments have shown that whatever of paradise the Golden State can offer to the rich, it will share, upon terms of marvellous equality, with the middle classes of American life. Over and above all other countries, it is destined to be the land of the common people. This is true, because, owing to its peculiar climatic conditions, it requires less land to sustain a family in generous comfort. For the same reason, cheaper clothing and shelter, as well as less fuel, suffice, while it is possible to realize more perfectly the ideal of producing what is consumed. Moreover, it is a natural field for the application of associative industry and the growth of the highest social conditions. Indeed, the country has distinctly failed as a land of big things, and achieved its best successes in the opposite direction. Its true and final greatness will consist of the aggregate of small things—of small estates, of small enterprises, of small fortunes. Progress towards this end is already well begun. It must go on until the last great estate is dismembered and the last alien serf is returned to the Orient. Upon the ruins of the old system a better civilization will arise. It will be the glory of the common people, to whose labor and genius it will owe its existence. Its outreaching and beneficent influence will be felt throughout the world.

CHAPTER II

THE NEW DAY IN COLORADO

THE old day in Colorado was the era of frontier barbarism. The glitter of Pike's Peak gold drew throngs of adventurous folk who toiled across the plains of Kansas and Nebraska in wagon-trains that they might speculate in the mysterious possibilities of a new country. They were not home-builders, but fortune-hunters. Wherever they found placer gold rude settlements sprang up.

In the mean time the cattle industry began to contend with Indians and buffalo for the possession of the grazing lands which sloped away from the Rockies, and the necessity of a base of supplies planted the seeds of a few permanent towns, such as Denver and Pueblo. These were mere clusters of rude homes and stores which seemed to hold out scant promise of future importance. The Indians were numerous and troublesome, and the life of the pioneers was spiced with danger. Though the country belonged nominally to Kansas, there was but the slightest pretence of civil government. Practically the only authority was that exercised by organizations of citizens, who brought horse-thieves and murderers to speedy justice upon the most convenient tree.

In 1861 Colorado became a Territory, and was then able to deal more effectively with the Indian, who was the common enemy and an obstacle to settlement and development. There was little in these early conditions to encourage the hope that a great and populous State could be established amid the mountains and plateaus. Mines, cattle, and border traffic were not alone sufficient for the making of civilization. Beyond these crude industries the future was speculative. The country was unexplored, the resources undeveloped, the conditions untried. The transformation which swiftly followed upon this period of doubt converted the frontier community into one of the most brilliant and promising of American States.

The dawn of the new day was heralded by the whistle of the locomotive. The dissolution of the Union armies had turned the faces of many thousand veterans towards the trans-Missouri region, and of these Colorado received its full share. The wonderful era of railroad-building—perhaps the most dramatic page in all our industrial history—had just begun. These circumstances conspired to give a new and powerful impulse to the territory at the base of the Rocky Mountains. Large capital joined hands with the increasing stream of immigrants, and Colorado entered with amazing vigor upon a stage of real and far-reaching development. More important than the finding of gold was the discovery of the fact that the highest forms of agriculture would flourish with the aid of irrigation. When this had been demonstrated by the pioneers there was no longer doubt about the future greatness of the State or the character of its civilization. Denver and a few other settlements began to take on the appearance of permanency, and even to exhibit the signs of coming refinement and power.

The settlers of Greeley inaugurated large irrigation enterprises and planted seeds from which the finest civic institutions were to grow. General William J. Palmer and his friends, anticipating the commercial value of climate and scenery even before the industrial economy of the community was established, laid out Colorado Springs, at the foot of Pike's Peak, and began to make Manitou and the Garden of the Gods ready for future thousands of health-seekers and tourists. Pueblo quickly felt the importance of its position on the banks of the Arkansas at the gateway of the mountains, and developed rapidly in population and business. The daring conception of a railroad to parallel the Rockies and open communication with Mexico, or to scale the giant peaks and penetrate the wilderness which lay beyond, took possession of General Palmer's mind and furnished the hope of further extraordinary developments.

Thus the decade between 1870 and 1880 saw the rise of Colorado to a place of immense promise and of important achievement, and in 1876 the nation signalized the centennial of the Declaration of Independence by bestowing the rich privilege of sovereignty upon the newborn commonwealth.

The Colorado of to-day contains a population of a little less than half a million. It is marvellously fortunate in its railroad development, having twenty-four separate lines, which maintain over five thousand miles of track, penetrating nearly every part of the State. Its mines of precious and base metals—very largely the former—yield an annual income of nearly fifty millions.

Its two million acres of irrigated land add forty millions more to the annual industrial product. Although manufactures are in their infancy, they even now produce goods to the value of thirty-five millions. Other business transactions, represented by the commercial and professional classes, represent considerably more than one hundred millions each year. The live-stock industry is difficult to estimate, but adds very largely to the yearly production of wealth.

Such are the results wrought out by the labor of a single generation upon the raw resources of a new State. Before glancing at the people who have organized such an economic life in so brief a space of years, and at the institutions they have created, it is important to consider the material foundation on which they have built.

Colorado owes something to its scenery, much to its climate, yet more to its mines. The first of these made it widely known as one of nature's wonderlands. The second was a prime factor in attracting population. The third poured a large and continuous stream of wealth into the hands of the people, and a little further on we shall see how loyally this has been used for the benefit of the State. The grandeur of the scenery and the charm of the climate are both matters of popular knowledge. Neither is peculiar to Colorado, for both are characteristic of the arid region as a whole. But nowhere else do the ordinary paths of travel lead through so grand a scenic region as in Colorado, nor has any other locality been as fortunate in the energy and intelligence bestowed upon the work of making this phase of its attractions widely and favorably known.

The Colorado climate is the product of high altitude and aridity. Denver is one mile above the level of New York harbor, and much of the inhabited portion of the State is even higher. The result is a rarefied atmosphere very exhilarating in its effects and extremely favorable to persons suffering with certain kinds of diseases. Summer and winter are almost equally delightful, though presenting great extremes of heat and cold.

Of the mineral wealth it is needless to say more than that it increases its annual output with regularity, and that there is every reason to suppose that much the greater part of it yet remains to be discovered and developed. It will be a permanent resource of the highest utility, since most of it is directly converted into money at the local mints. While the energies of the mining industry are chiefly centred upon the search for precious metals, the country is endowed with the greatest variety of mineral riches. These include nearly all the base metals, such as copper, lead, and iron, as well as coal, oil, precious and semi-precious stones, granite, marble, onyx, and sandstone. These materials exist in the greatest profusion, but must lie mostly unused until the population largely increases.

In considering the matter of agricultural development, it must be remembered that Colorado is the crown of the continent. Its lofty mountain-peaks cut the rainfall and melting snows in twain, sending one part to the Pacific and the other to the Atlantic Ocean. The same influence makes a radical division in climate, productions, and the character of agriculture. Irrigation development naturally began earliest where streams could most easily be diverted. This was on the high plateau which slopes eastward from the foot-hills and merges into the Great Plains of Nebraska and Kansas.

For a period of nearly twenty years, beginning in 1870, canal construction and the settlement of lands were actively carried on in this part of the State. The scene of action was principally in the valleys of the Cache la Poudre, the Platte, and the Arkansas. Here the farms are of large size for an irrigated region, though the present tendency favors a smaller unit. These districts, prosperous in ordinary times, have not escaped the evil effects of the general depression in recent years. The products are diversified and largely disposed of in the home market. In the upper Arkansas Valley, where the foot-hills furnish shelter from the high winds prevailing at certain seasons, fruit-culture has been notably successful. Prices of unimproved lands on the eastern slope range from twenty to fifty dollars per acre, while cultivated lands are valued at one hundred dollars an acre and upwards, according to the extent of improvements and location with reference to cities or large towns. The glimpse we have had in an earlier chapter of the agricultural industry of Greeley Colony may be accepted as true of the entire region east of the mountains, for Greeley has been the model to which other districts have looked for inspiration. The experimental farms which surround the agricultural college at Fort Collins undoubtedly represent the highest type of irrigation results in this part of the State. In the Arkansas Valley the altitude is lower and the climate more favorable for small farming and fruit-culture.

The San Luis Valley is an elevated plateau lying between parallel mountain-ranges in the southern and central part of the State. Here a vast expenditure has been made for irrigation works, but efforts at settlement have been almost uniformly disappointing. The explanation is found in the altitude, which is from seven thousand to eight thousand feet above sea-level. This makes short seasons and limits the farmer's industry to the hardiest class of crops. There is no month in the year when frost is not likely to occur; yet the country makes a wonderful yield of grain, of vegetables, and frequently of small fruits. There are instances of great prosperity on the part of individual settlers, but as a whole the valley shows a record of failure for those who have attempted to make homes there. A striking example to the contrary is seen in a few thriving communities of Mormons. The industrial system which we have already studied in connection with Utah produces the same good results in the San Luis Valley. In view of this fact it must be assumed that the locality will eventually be settled and sustain thousands of prosperous people. Land and water may be obtained more cheaply here than anywhere else in Colorado, and there is a good market for the products of the soil. The costly preliminary work of reclamation has been well done in advance. A labor colony, founded upon wise plans, backed by sufficient capital, and inspired and managed by skilful leadership, would solve the problem of colonization for the San Luis Valley, while furnishing work and homes for those who need them. The Mormon communities are practically of this character in the beginning.

The western slope of Colorado constitutes a region entirely distinct. From a casual glance at the map it would be inferred that about two-thirds of the State consist exclusively of mountains, and are therefore unfitted for settlement. The truth is that there are many beautiful valleys of varying size and elevation, and that these are destined to sustain the most interesting and profitable agricultural districts of Colorado. Unlike the eastern slope, there is here more water than irrigable land—a condition almost unique in the arid region. The valleys are so protected by the mountains which inclose them upon either hand as to have a climate of their own. This is perceptibly influenced by the warm winds which make their way from the Gulf of California through the canyons of the Colorado river. These conditions are extremely favorable for the culture of the most delicate fruit and for the diversification of general crops. The principal rivers of the western slope are the Grand, the Green, and the San Juan. These are fed by the prolific snows of the higher Rockies, and carry a strong and turbulent flow of water throughout the year. They are not always readily diverted, however, as their channels have been deeply cut through the rocks and soil, and the stream often flows below the level of the tract to be irrigated. This makes it necessary to elevate the water in many instances by pumping machinery, which can be operated cheaply by the power of the stream itself, or by the use of coal, which in many cases is found close at hand.

The best example of the possibilities of the western slope is seen in the neighborhood of Grand Junction, where two splendid streams—the Grand and the Gunnison—join forces and flow westward to their meeting with the Green river across the Utah boundary. Here the valley opens out into a broad desert, with foot-hills, or *mesas*, marking the rise to the mountain masses which line the horizon on either hand. To the eye of the traveller who has just come through the awe-inspiring scenery of the mountains and narrow upper valleys, nothing could be less promising than the brown waste of arid soil which he beholds upon approaching Grand Junction. The scene is one of utter desolation, for even sage-brush and mesquite are absent from large portions of the landscape. The roaring river hurrying down the slope seems to mock, with hoarse laughter, the unfruitful soil, which stretches away from its banks in silence and in sunshine. But if the traveller leaves the train and rides out a few miles upon the desert he will quickly interpret the mystery of these conditions. Wherever the water has been married to the soil, prolific fields and orchards have sprung from the union—such fields and orchards as may be rivalled as yet only in semi-tropic California. The favorite size of farms is from ten to twenty acres, or only about one-fourth or one-eighth of the average area of farms on the eastern slope of Colorado.

Fruit-culture chiefly claims the thought and energy of the people in this locality, and it is very profitable. Peaches are the leading product, and they are wonderful for flavor, size, and beauty. A local festival is "Peach Day," when people come from all directions to feast upon the free bounty of Grand Junction. Lands are held high, ranging from fifty to one hundred and fifty dollars per acre, though they were but recently public property and of no value until irrigation facilities had been provided. The excuse for these high prices is the fact that orchards in bearing frequently earn one hundred and fifty dollars and upwards per acre each year. This is due in part to the marvellous quality of the fruit, and in part to the extensive home markets offered by mining camps in the mountains, and by large towns such as Denver, Pueblo, and Colorado Springs. In view of the severe limitations which nature has placed upon the territory suited to the highest culture of delicate fruits, and of the steady growth of the consumers in mountain districts and large towns, there is, perhaps, good reason to hope that profits will be well sustained for a long time to come.

These conditions make the western slope choice ground for settlement. They are by no means limited to the lower valley of the Grand, but exist in the numerous smaller districts scattered through the mountains in the western and southwestern part of the State. On the social side the possibilities of the country have not been much developed, as there has been a lack of organized effort in settlement. But the extraordinary fertility of the soil, the extent of the water supply, the proximity of mining camps, and the charm of the climate must sometime combine to lend a powerful impulse to the highest development of these favored valleys.

The scenery presents not merely pictures, but pictures that are painted and tinted and wrought into fantastic shapes. To the ever-changing aspect which the mountains, buttes, and *mesas* gain from light and shadow, from sun and cloud, new and strange beauties are added by the reds, pinks, yellows, and grays of soil and rock. From the vivid cliffs and bluffs which stand guard upon river banks to the purple and shadowy peaks which lift their pointed heads on the utmost horizon, the scene is one of such beauty and grandeur as may be felt, though not described.

Such are the materials of Colorado. Let us look now at the people and their civilization.

Intense local patriotism is a well-recognized western trait, but in Colorado it amounts to a religion. We have seen how the progress of California was impeded by certain elements of its population having no sympathy with its higher ideals, no pride in its best achievements. If there is such an element in Colorado it is unseen and unfelt in the larger life of the State. The community is dominated by a spirit of aggressive enterprise which recognizes no impossibilities, harbors no doubts of the future. This is the explanation of what we may fairly call—in view of the brief time consumed in its evolution from conditions essentially barbaric—the splendor of Colorado civilization. It is this which created Denver, almost the fairest of American cities; which made Colorado Springs the centre of wealth and refinement; which blackened the sky of Pueblo with the smoke of a young Pittsburg; which planted Leadville among the clouds; which placed a steam ladder against the dizzy summit of Pike's Peak; which carried the iron highway of commerce through gorges and mountain-passes; which turned rivers out of their courses that barren soil might blossom with the homes of men. This high public spirit is seen in schools, colleges, clubs, public buildings, and improvements—above all, in the homes.

It has been the policy of those who have taken riches from the mines to invest them in developing the State's resources and in beautifying its cities and towns. In this respect the spirit of Coloradans presents a sharp contrast to that of many who grew rich in California, and of most of those who received the enormous wealth coined from the resources of Nevada. In the latter instance the beneficiaries of the mines did not even make their homes in the land which raised them from poverty to affluence. But the men of Colorado have been proud of their devotion to the commonwealth which they created, and have striven by every means in their power to keep it moving along the upward path. In the erection of fine public and business buildings and of palatial homes, in the extension of railroads and irrigation canals, in the increase of banking capital, and, above all, in the pursuit of daring mining operations, their enterprise has been unequalled by that of any other western community. Foremost among those who inaugurated this policy at the risk of their fortunes was the late H. A. W. Tabor, whom Denver and Colorado should always hold in grateful remembrance.

But there is another side to the picture. The tendencies of Colorado civilization are not wholly in line with the best ideals of the arid region. Viewed from this stand-point, its institutions are in a measure disappointing. The marvel of Denver's growth and the beauty of its homes and business districts should not blind us to the fact that it is essentially like the great cities of the East. It is, in a word, another case of "progress and poverty." The equality which marked its early life has diminished in proportion to the growth of the population and the increase of wealth. The rise of land values has made it more difficult for the many to own their homes, and has increased the wealth of the land-lord class. All the evils which grow from the conditions of life in a large city are rife in Denver.

These are not the natural economic tendencies of a country founded upon irrigation. They are not such as we have observed in localities where irrigation has been so nearly the dominant influence as to shape institutions. The explanation is found in the influence of mining speculations which, diffused like the atmosphere, breed a cheerful but demoralizing contagion: also in the early tendency to adopt a comparatively large farm unit. These two forces have operated to produce very different results from those flowing from the Mormon land policy, which we saw in the Salt Lake Valley; or from those which grew in consequence of irrigation in the San Bernardino Valley of California. Large portions of Colorado are admirably adapted to the development of the best social conditions—of those conditions which make for a permanent and growing body of landed proprietors; for the multiplication of little towns rather than a concentration of people in congested centres; for the application of the associative principle in connection with industrial and commercial affairs. It is gratifying to be able to record that the latter currents of thought in Colorado seem to show the effects which might be expected to result from its environment.

More and more the State asserts its authority in the control of irrigation works and practice. The farm unit grows smaller, and intensive cultivation finds more followers. By enormous majorities the people pronounce in favor of party platforms which demand the public ownership of public utilities. Equal suffrage and the presence of women in the legislature mark the progressive temper of the body politic. On the whole, there is much reason to hope that the social achievement of the next generation in Colorado will be equal to the material achievement of the last.

CHAPTER III

THE PLEASANT LAND OF UTAH

THE industrial system of the people who compose three-fourths of the population of Utah has been considered in connection with typical institutions of the arid region in earlier pages. It remains to speak of the physical aspects of the newest of American States.

Standing on the summit of Capitol Hill in Salt Lake City, one may take in the entire range of Utah's resources, developed and undeveloped, in a single sweeping glance.

At one's feet lies the mountain metropolis, with the stately temple of native granite supporting the golden figure of the Angel Moroni on its culminating turret, and beside it the odd-roofed tabernacle, like an enormous turtle basking in the sun. Below, the miles of city streets stretch southward—a huddle of business blocks in the centre; a series of garden-homes hidden by leaves and blossoms on either hand. Still farther out the generous city lots expand into little farms of ten or twenty acres, exemplifying the prosperous irrigation industry, which is the corner-stone of the commonwealth. Far down the valley the smelters send up their black smoke to the sky—emblem of the mining industry. At the lower end and on the sides of the valley lies an expanse of arid land in its natural desert state, typifying alike the conditions encountered by the pioneers and the present aspect of a vast proportion of Utah. On the left, one sees hastening down the canyon the roaring creek which watered the first crop ever planted in these valleys; on the right, the glistening expanse of the famous inland sea. And inclosing all, the mountains—treasure-house of precious metals, of coal, of iron, of timber, and of the snows and waters which fertilized the desert and made it blossom with civilization.

Here in a single picture is all of Utah—town and country, farm, workshop, mine, shrines of religion, and play-grounds of wealth and leisure. If the human eye might look beyond the brown barriers, which now intercept the view, to the very boundaries of the State, it would see nothing more than it sees from Capitol Hill, for Utah is a succession of mountains, of desert valleys, and of crystal streams, and scattered over it all is the wealth of the mine and the sleeping potentiality—here and there partially awakened—of the home, the field, the orchard, and the workshop. It is a pleasant and a sunny land, unforgotten by the most casual traveller who has crossed it and well loved by those who claim it as their home. It is easy to understand the feelings of the little Utah boy who tired of the World's Fair in a very few days and begged, with tears in his eyes, to be taken back. Asked if there were not plenty of interesting sights in Chicago, he replied, "Yes, but I can't see no mountains!"

Utah has a population of about a quarter of a million. Though this is but one-half as many as Colorado, and one-fifth as many as California, the new State approaches more nearly to the ideal of a self-supporting community than either of its neighbors. The bulk of its population has been trained in the policy of industrial independence from the time of its earliest settlement. We have seen how this was accomplished with little capital except that which was taken from the soil. The fortunate results may now be observed in an industrial life which is remarkably diversified for a community so new and remote.

Very much the larger portion of the population may be seen in a railroad ride of two hours, from Provo through Salt Lake City to Ogden. This ride takes the traveller through Utah, Salt Lake, and Weber valleys, which were the first to be reclaimed, and must always contain the densest population. The original advantage of this now splendid district was its abund ant water supply, flowing in numerous streams from high mountains near at hand. To this advantage later development added the presence of important railroad system sand the proximity of rich mines of precious metals. The growth of other portions of the State, which must be large and constant, can only confirm the supremacy of the communities which have grown up near the shores of the Great Salt Lake. These are alike the commercial, political, and religious centres of Utah, to which all the sources of material wealth must be tributary.

The natural resources of Utah, as in the case of all the States of the mountain region, are wonderfully diverse, though in the infancy of development. The annual output of gold, silver, copper, and lead is now about ten million dollars, and is constantly increasing. The mining industry is thus a large contributor to local wealth, supplying employment to thousands of laborers, furnishing a home market for the products of the farms, and giving constant encouragement to the extension of the railroad system. The work of discovery and development in new districts steadily progresses, and the economic value of mineral resources must grow with every passing year. Utah is somewhat deficient in forests suitable for timber, but is abundantly endowed with coal, iron, and water-power, which are the raw materials of manufacture. The development of water-power in connection with electricity has begun in earnest and will be a factor of high importance in the future. This is accomplished by damming streams which flow through mountain canyons in the immediate neighborhood of large towns. This requires the transmission of electricity for a distance of only a few miles, owing to the fortunate natural conditions. The State is also rich in fine building stone, which includes beautiful marble and onyx.

The climate of Utah is that of the milder temperate zone, and during large portions of the year is thoroughly delightful. Ploughing begins earlier than in eastern localities of similar latitude. The spring days are showery and windy, but the first warm breath of approaching summer is usually felt by the last of April. From May until November there is little rain. The thermometer climbs high during the summer days, but the heat is not oppressive, owing to the dryness of the air. Mountain breezes, sweeping down through the numerous canyons, make the nights delightfully cool. In Utah it is the custom to run irrigation waters through the streets of cities and towns during the summer, and the music of these numerous babbling streams is a pleasant feature of the country, and apparently of considerable effect in mitigating the heat. The long autumn, extending frequently into December, is the most charming season of the year. The winter is usually brief, but accompanied by considerable snow even in the valleys and a very heavy precipitation in the surrounding mountains. On still nights the thermometer sometimes goes well below zero. The extreme southern portion of the State, locally known as "Dixie," is much milder, indeed verging upon the semi-tropical, and permitting the culture of figs, almonds, and English walnuts.

The agricultural industry of Utah presents some odd contradictions. It is more diversified, and therefore more completely self-sustaining, than that of any other western State. Farms are smaller and less incumbered with mortgages, and the people may be said to live generally in easier circumstances than the occupants of the soil in any other part of the United States.

On the other hand, it is not here that we find the best methods of irrigation and cultivation, nor of packing and marketing the crops. The high intelligence and persistent effort which placed certain communities in Colorado and California at the head of the list in their respective lines of production are wanting in Utah. The fruit possibilities of the country have been especially neglected until recently, so that newly settled portions of Idaho have easily surpassed Utah localities which had the advantage of more than a generation in time. Of late years there has been a marked improvement, resulting from a State Board of Horticulture, from the influence of the Agricultural College at Logan, and from the infusion of a considerable element of new settlers.

Not far from half a million acres of irrigated land are in actual cultivation, while nearly twice that number are under canals now completed or in process of construction. Nearly one hundred thousand acres are cultivated in grain crops without irrigation. These are mostly situated north of the Great Salt Lake, where the rainfall is heaviest. The total amount of cultivated land is, however, only about one per cent. of the area of the State. According to the best local authorities, something like six times as much land as is now irrigated can be brought under cultivation by these methods when the water supply is utilized. Here is a large field for the growth of population.

The territory available for settlement is well distributed throughout the State. The country immediately surrounding the three large towns of Ogden, Salt Lake, and Provo is compactly settled, yet better methods of utilizing the water supply will enlarge the area of cultivation even in those districts. The beautiful country lying immediately north of Great Salt Lake, and watered by one of the largest irrigation systems in the West, is still largely open to settlement. Here the fruit industry is rapidly developing in connection with general farming and stock-raising. In this locality unimproved lands sell for prices ranging from thirty to fifty dollars per acre, while the annual water-rental is two dollars and a half per acre. The construction of new irrigation systems in the large deserts south of the lake, in central Utah, has been actively carried on during the past five years. Here much government land is open to entry, but the settler must purchase water-rights from canal companies. This item of cost should be added to the price of the land. In this locality unimproved lands with water cost from ten to thirty dollars per acre. The raising of grain and hay is profitable because of the demand which the stock industry furnishes for these products, while the culture of peaches, apricots, apples, and prunes seems promising. These fruits have been raised successfully for forty years in the more sheltered valleys and foot-hills of central Utah, and the later orchards are being gradually extended farther out upon the desert.

A promising region now almost wholly undeveloped is the Uinta country, surrounded by the mountains of that name and lying directly east of Salt Lake City. Here a great Indian reservation will soon be opened to settlement, and plans have already been made to reclaim and colonize the most attractive parts of the district. This will be done by the Mormon methods, which have been so successfully applied throughout the intermountain region. Settlers will be organized into companies constructing their own canals by combined labor and dividing the farms and village lots under an equitable arrangement. Thus the land will cost the government price of one dollar and twenty-five cents per acre, plus a certain amount of labor in making improvements. The Uinta country is rich, not only in agricultural land, but in minerals, timber, building-stone, asphalt, and other useful resources. It is now remote from railroads, but its settlement and development must inevitably lead to the construction of the iron highway. The deserts in eastern Utah within reach of the Green river, and in southern Utah in the neighborhood of the Colorado and Virgin rivers, have but begun to feel the influence of modern enterprise. The costly works necessary to their reclamation will doubtless come as the pressure of settlement increases.

Utah's pre-eminence in the land of irrigation is due to historical considerations rather than to the excellence of its canal systems or to the superiority of its laws and customs. In the latter respect it is distinctly disappointing. The pioneers turned the water from the most convenient streams by the crudest devices, and with no thought for any grand and enduring scheme of engineering. Canals were often duplicated many times over in a single valley, wasting precious water, injuring the soil, and unnecessarily restricting the area of settlement. The evils of the irrigation system hastily constructed by the pioneers are now seen and felt; yet the early appropriators of the mountain streams are so tenacious of what they consider their rights as to render the reform of the laws, the reconstruction of canals, and the readjustment of irrigation customs to meet the conditions imposed by the pressure of population, extremely difficult. Efforts to establish a plan of State supervision which would provide for the measuring of water and its just apportionment among irrigators—a system which is the first and last essential of peace and progress in an arid land—have been repeatedly frustrated by the unreasoning jealousy of the older settlers. This has occurred in spite of the fact that the best local authority asserts that at least seventy per cent. of the water supply is wasted under present methods.

For fully forty years Utah irrigation was held in the hands of small local companies composed exclusively of the land-owners. Works were built by the common labor of the community, and the repairs and improvements made in the same way. The first important departure from this policy came with the construction of the bold and expensive canals of the Bear River Irrigation Company, which have reclaimed a large area lying between the Great Salt Lake and the Idaho boundary. These works also supply domestic water to the city of Ogden and furnish power for electrical purposes. The Bear river canal is one of the most notable works of engineering in the United States, ranking at least second, if not first, among irrigation systems in this respect. Not far from two million dollars of eastern and foreign capital is invested in the enterprise. The work exhibits almost every phase of irrigation—engineering, including canals cut into solid canyon walls, tunnelled through mountain sides, as well as iron flumes and notable diverting dams. Other private water systems followed the Bear river development. The most important of these, are the storage enterprises at Mount Nebo and in the neighborhood of Sevier lake. Both of these utilize the flood waters of the Sevier river, which is one of the largest streams in the State.

No other community in the West will deal with more interesting irrigation problems in the future than Utah. The conflicts between the policies of public and private ownership cannot be avoided, since both are represented in systems which lie side by side. In districts where settlement is furthest advanced and canal systems the oldest, the crying necessity for the reconstruction of works and the application of a rigid public supervision must soon be answered. Coincident with the settlement of these questions will be the gradual evolution of better agricultural and horticultural methods. The next decade will inevitably see significant developments in connection with the most important feature of Utah's economic foundation.

CHAPTER IV

THE CRUDE STRENGTH OF IDAHO

Two travellers crossing Idaho on the same day, one by the Northern Pacific and the other by the Oregon Short Line, would receive quite opposite impressions of the country. The one who had traversed its northern end would think of Idaho as a land of dense forests mirrored in the surfaces of beautiful lakes, of narrow valleys presenting but meagre scope for agriculture, of abundant verdure, and of Alpine scenery. These conditions suggest nothing except the lumber-camp, the mine, and the stock-range.

The traveller who crossed the southern part of the State, on the other hand, would receive the impression of an arid land, with wide stretches of valley and plain covered with wild grasses or sage-brush, alternating with curious formations of rock and lava. This traveller would understand how a large agricultural population may be maintained by turning the abundant water of the streams upon the rich valley soils. Both of these impressions of the resources of the great inland State of the Pacific Northwest would be true, but either of them taken alone, as is often done by travellers, would be quite inadequate. The fact is that Idaho, perhaps even more than other localities in the Far West, presents a marvellous diversity of soil, of climate, and of natural endowments. This diversity must necessarily mark its future industrial life and be reflected in the social side of its civilization.

The first important item in the material wealth of Idaho is its water supply. Along its eastern boundary nature has piled up towering mountain-ranges, which receive an enormous snowfall. These mountains are covered with forests, ranking among the most magnificent in the world, which treasure the snow within their sombre depths until the warm weather gradually sends it down to streams which reach out through hundreds of miles of lower valleys. The great river of Idaho is the Snake, which deserves a better name in spite of its tortuous meanderings. This is the largest tributary of the Columbia, and drains a vast water-shed, beginning in the Yellowstone Park of Wyoming and including all of southern and much of western Idaho with eastern Oregon and Washington. Along its course it receives numerous minor streams which drain interior mountain systems. The Snake is nearly one thousand miles long and so deep that in some places soundings of two hundred and forty feet have failed to find the bottom. While incalculably valuable for irrigation, this is by no means its only utility. It is navigable for one hundred and fifty miles above its junction with Clarke's Fork in the northern part of the State, and may sometime furnish a water route to the Pacific Ocean through the Columbia. It also has immense possibilities in the way of power, which must some day be harnessed to electricity, moving passengers and freight through the valleys, and perhaps furnishing both light and heat to thousands of homes.

The most marvellous of these water-powers is furnished by the Great Shoshone Falls, in the south-central portion of the State. Here is a waterfall scarcely inferior in power and grandeur to Niagara, and, like the latter, destined to be an important economic factor in the region within its reach. The abundant water supply is by no means limited to the splendid valleys in the southern part of the State. It is found in hundreds of mountain streams throughout the central portion, and, in the narrow district which tapers northward to the British Columbia line, is so marked a feature of the landscape as to impress the most casual observer. Here Clarke's Fork of the Columbia, draining the Bitter Root mountains in western Montana, is a stream of noble proportions. Lakes Pend Oreille and Cœur d'Alene are among the most notable of inland waters, both in beauty and extent. But these northern streams will not be used extensively for irrigation, as there is considerable rainfall and comparatively little agricultural land. They are valuable, however, in connection with mining, lumbering, and water-power.

The forest area of Idaho includes seven million acres, and the principal native trees are fir, spruce of the white, red, and black varieties, scrub oak, yellow and white pine, mountain mahogany, juniper, tamarack, birch, cottonwood, alder, and willow. Some of the large forest regions, notably that of the Pend d'Oreille in the north, are almost unexplored, and constitute the wildest parts of the continent. Naturally, a country so well wooded and watered is the home of fish and game of the rarest kinds. The mineral resources are well distributed and diversified to the last degree. The annual output of precious metals varies from eight to eighteen millions, though the industry is yet in its infancy. Base metals, precious stones, and building material, including fine marble, exist in abundance.

Idaho lies wholly in the temperate zone, yet its climate presents a great variety of features. In the larger proportion of its territory, which consists of mountains and elevated valleys, the winter is a season of considerable severity. Here the thermometer registers far below zero, though the days are rendered comfortable by dry atmosphere and abundant sunshine. In these higher altitudes, however, production is limited to hardy crops, and runs largely to hay and grain, which finds a market in the mining and lumbering camps and at the hands of stockmen.

Southern and western Idaho are entirely different from the eastern, central, and northern districts. The altitude ranges from two thousand to four thousand feet, and the climate admits of the production of delicate fruits. In much of the Snake River Valley, and still more notably in the numerous smaller valleys which open into it, small farming and fruit-growing will assume great proportions. Here the densest population will be maintained and the finest institutions developed. Typical districts of this sort are the valleys of the Boise, of the Payette, and of the Weiser.

The most famous product of these charming districts is the prune. The prunes of southern Idaho were awarded the first prize at the World's Fair in 1893. Apples are also a most profitable crop. Twenty-three varieties of Idaho apples surprised the eastern pomologists at the Exposition. Professor L. H. Bailey, the horticultural expert of Cornell University, recorded the fact that the yellow Newtown pippin "is twice as large as the same apple grown in the Hudson River Valley" of New York. Such delicate fruits as apricots, peaches, and nectarines, are successfully grown in the lower valleys of southern Idaho.

While there are occasional instances of a temperature twelve degrees below zero, the winter in this part of the State is really short and mild, being influenced by the Chinook winds, which make their way from the Pacific over a distance of five hundred miles. Spring opens early and is apt to be windy. The summer temperature is high, though the nights are invariably cool. The almost complete absence of rain between spring and late autumn makes the best conditions for irrigation, though it also involves dry roads and clouds of dust when the wind is high. Of the healthfulness of Idaho it is enough to say that it shows the smallest percentage of deaths of any State or Territory in the Union. This is not only the official record of the population as a whole, but it is the showing of the army statistics, which furnish a better test, because the conditions of life in that service are remarkably even throughout the country.

The greatest irrigation development has occurred in the upper Snake River Valley in the neighborhood of Idaho Falls. Here over four hundred thousand acres of land have been watered at a cost of more than a million dollars. The chief crops are grain and alfalfa, the former yielding from sixty to eighty bushels, the latter from seven to ten tons per acre. Land sells for from twenty to fifty dollars per acre with perpetual water-rights. The large canals are owned by private companies and represent eastern capital. Large private canals have also been constructed in the lower valleys, the products of which have already been referred to. These are in southwestern Idaho near the border of Oregon. Land is usually more costly here than in the upper country, owing to the more favorable climatic conditions and the better opportunities for small-farming. Prices range from forty to one hundred dollars per acre as a rule. Farther down on the Snake, in what is known as the "Lewiston Country," land which has recently been reclaimed from the desert is held at one hundred dollars per acre. It is expected that a choice fruit district will be developed in this locality, and cherries are put forward as the favorite crop.

While the chief agricultural and horticultural districts lie along the Snake river and its important tributaries, the mountains of central Idaho are full of picturesque, well-watered valleys. In some of these settlement has been made for a generation, and the products are sold in surrounding mining towns and stock ranches. The Nez Percé Indian reservation is also a fertile and promising country, though the Indians have been located in severalty on some of the most desirable lands which would otherwise be open to settlers. A considerable locality in the northern part of the State, known as the "Palouse Country," is farmed in grain without irrigation. The same is true of the Cammas Prairie, in one of the central counties. But Idaho is substantially an arid region, and its characteristic institutions are growing up where irrigation has been supplied. The ultimate development of its diversified resources will give it a many-sided economic life.

"The Baby State" is a title conferred upon Idaho by its World's Fair Commissioner, Captain James M. Wells, in his official report. While it is not the latest accession to the Union, nor the smallest in population, there is a certain element of just characterization in the name, though it can be but temporary. The impression which Idaho makes upon the observer is that of crude, undeveloped strength. Utah is newer to statehood, Nevada and Wyoming smaller in population, yet Idaho seems more like a lusty infant than either of these. It is such in the fact that its character is less fixed, and that the current of population which is to make its enduring institutions has but begun to flow in upon the fertile valleys which will dominate its life, because of their capacity to sustain dense communities.

Already there have been four periods in the history of Idaho. The first was that of the explorer, when Lewis and Clarke, and later Bonneville, came to look over the country and report upon its possibilities. The second was that of the trapper, when the Hudson Bay Company established its supremacy after a brief struggle with American hunters. The third was that of the missionary, who established the first feeble beginnings of civilization, then pushed westward for the historic conquest of Oregon. The fourth was that of the miner, who gained a lasting foothold in the mountains and along the streams. The fifth era is now in progress, and has been, after a fashion, since the early sixties. This is the era of agricultural settlement and of town-building. It amounted to little until the railways were built across the northern and southern extremities of the State, and until enterprise was attracted by the possibilities of irrigation. It is only in recent years that home-building, in the better sense of the term, has been seriously begun in Idaho. All that went before was mere adventure, whether inspired by religious zeal, by lust of gold, or by the passion for national conquest.

The most notable colony yet made on the irrigated lands of Idaho is that of New Plymouth, in the Payette Valley, twelve miles from the town of Payette. This colony, organized in the spring of 1895 by William E. Smythe and Benjamin P. Shawhan, was intended to represent a high social and industrial ideal. The initial work of enlisting settlers and public interest for the undertaking was done at Boston, with the aid of Dr. Edward Everett Hale and other prominent men, but most of the actual colonists were from Chicago and the middle West. The pioneers of New Plymouth, who represented a rather unusual quality of settlers, were drawn principally from urban business and professional life, yet entered enthusiastically and successfully upon the work of making homes on sage-brush lands twelve miles from a railroad, in a remote and undeveloped part of the West.

The Plymouth industrial programme aimed at complete economic independence of the people by the simple method of producing the variety of things consumed, on small, diversified farms; of having surplus products, principally fruit, for sale in home and eastern markets; and by combining the capital of the settlers, by incorporation of a stock company, to own and develop the town-site, and to erect and operate simple industries required in connection with products of the soil. On the social side the plan aimed to give these farmers the best advantages of town life, or at least of neighborhood association. This was accomplished by assembling the houses in a central village, laid out, in accordance with a beautiful plan, with residences grouped on an outside circle touching the farms at all points. This plan brought the settlers close together on acre-lots—"home-acres"—thus preventing isolation, and giving them the benefit of school, church, post-office, store, library, and entertainments.

The Plymouth settlers have been contented and prosperous from the first, and have had less than the usual share of early trials and disappointments. They testify that the social advantages of the colony plan, as compared with the drawbacks of individual and isolated settlement, are alone sufficient to warrant its use.

Each of the early sources of Idaho's growth left its driftwood along the slender stream of the State's development. The "old-timer" is an influential element in its citizenship. Later comers, perhaps forgetting the distance which has been covered since the days of the primeval wilderness, and, in their impatience for progress, belittling the hardy heroism which made it possible, sometimes complain that the "old-timers" are content to live in the memory of "the early days" while contributing little, either of enthusiasm or capital, to further development. The obvious truth is that different classes of people are required for different classes of work. If the men who filled the rôle of pioneers are not well suited by taste and temperament to solve the problems involved in the evolution of a complex industrial life, it is doubtless equally true that the element which enters enthusiastically and intelligently upon this later work would not have dealt as successfully with the harsher conditions of thirty years ago. It is true, however, that there are two well-defined classes in the citizenship of Idaho, and that they represent different ways of thinking. The steady growth of population must soon give the supremacy to those who are trying to put the farm in the place of the desert, to develop the best methods of fruit-culture, to bring the irrigation system under rigid public supervision, and to establish the highest standards in political and social life.

Boise City, the capital and commercial centre of Idaho, is somewhat smaller than the chief city of any other western State. It is a beautiful town, on the river of the same name, and is the seat of considerable wealth and of growing refinement. In the long summer season it is almost hidden among its trees, for the pioneers planted liberally in this comfortable home-spot which they had prepared for their old age.

The business and public buildings of Boise, as well as many of its private residences, are examples of the best modern architecture. The valley above the city has been reclaimed by irrigation and is being gradually peopled by small farmers. It is a fruit district of great promise, and in time must become one of the most populous and beautiful valleys in the arid region.

The other important towns of the southern part of the State are Idaho Falls, Pocatello, Mountain Home, Caldwell, Nampa, Payette, and Weiser. Most of these are small, but important in view of the certain development of the rich country which surrounds them. Lewiston, in the north, lies in the heart of a fine territory, and is the trading point for the Nez Percé Indian reservation.

Moscow is still farther north, and owes its prominence to the presence of the State university. Besides these there are scores of important mining towns scattered throughout the mountains, but mostly away from the railroads. In town-building, as in the development of all its other resources, Idaho has barely crossed the threshold of its vast possibilities.

CHAPTER V

ARID WASHINGTON AND OREGON

To speak of Washington and Oregon as belonging to the arid region is to challenge popular belief, which regards these as lands of extensive rainfall. Even in the Far West it is customary to speak of Oregonians as "Webfeet," on account of the dampness of their climate. The fact is that there is rain enough in Oregon, as there is wealth enough in New York, but that it is not well distributed.

The annual precipitation along the coast of these States ranges from sixty to one hundred and twenty inches, and is the heaviest in the United States. In the Puget Sound region, which is cut off from the coastline by a range of mountains, the rainfall is less, but still so heavy as to make the climate distinctly humid. The bulk of settlement has been in the extreme west, and this fact accounts for the reputation of the country as one of excessive rainfall. Nevertheless, about two-thirds of these great States belong indisputably to the arid region, and can only sustain a dense population with the aid of irrigation. The singular contrast presented by such marked climatic differences is due to the Cascade mountains, which form a barrier running north and south, intercepting the moisture from the Pacific

Ocean and decreeing that the western third of these States shall have too much rain, while the eastern two-thirds shall have too little.

The humid coast region is comparatively well settled and in a condition of flourishing development. Portland, one of the most substantial of American cities, is sustained by the trade of the interior, by manufactures using the power of the Willamette river, and by a growing commerce moved by railroads and shipping. The cities of Puget Sound are younger and less firmly established. While it is impossible that all of them shall realize their early dreams of greatness, Seattle and Tacoma have passed beyond the period of doubt, and are clearly destined to be populous and powerful. The Washington coast is marvellously rich in forests, which creep down to the very edge of the Sound, and in other forms of natural wealth which will contribute to the upbuilding of manufactures and commerce. The growth of centres of population between the Cascades and the sea will have an important relation to the prosperity of the much larger regions east of the mountains.

Not all of eastern Washington is worthless for agriculture without irrigation. Large areas of rolling land are farmed in wheat by dependence upon the rainfall. The Big Bend and the Palouse countries are notable districts of this kind. The high, rolling, bunch-grass hills on the western side of the Columbia are so well adapted for grazing as to be locally known as the "Horse-heaven Country." Along the northern line, running easterly to Idaho and covering a broad belt of territory, are rich mineral and forest areas. But the future of eastern

Washington, as a whole, hinges on the irrigation industry. This will be the dependence for the support of a dense population, and will have an important bearing on the development of other resources.

The most important tracts of arid land lie in the central part of the State. Perhaps no other locality in the arid region of the West is so abundantly watered or so richly favored in natural navigation facilities, though rivers must be improved before they can reach their highest utility. The Columbia river, the Yakima, the Snake, and the Wenatchee are the principal sources of water supply, though these have numerous valuable tributaries. The irrigable district is inclosed between the Cascade and Bitter Root ranges, and the drainage from these high mountains furnishes more water than can ever be used to advantage.

The most important irrigation development thus far accomplished is in the Yakima Valley. Here there are nearly four hundred miles of canals, some of them very large. The towns of North Yakima, Prosser, and Ellensburg are the chief points in the irrigated portions of the valley. A number of canals have been constructed along the Wenatchee river, and a promising development has been begun on the plains of the Columbia, near its junction with the Snake, in the neighborhood of Kennewick and Pasco. A good beginning has also been made on the Walla Walla river near the Oregon boundary, and on the Snake river at the point where it flows out of Idaho into the Lewiston country. For long distances both the Columbia and Snake flow through deep channels, so that their abundant supplies can be utilized only by pumping. As yet this has not been extensively done, but doubtless will be in the future.

The soil of arid Washington is generally a light, sandy loam, or volcanic ash. Some portions of the river-bottoms have extensive tracts of dark alluvial soil, while in other portions the soil is so sandy as to drift before the wind. While alkali is frequently encountered in small spots, the soil as a whole may be described as free of both alkali and clay. Its depth and texture are such as to insure good drainage, which is essential in connection with irrigation. Rich in potash, lime, and phosphoric acid, the soil should prove enduring, as it has already proven extremely productive.

The climate is mild, though distinctly of the temperate zone. The temperature sometimes goes as high as 108° in summer days, and as low as zero in winter nights; yet the climate is not severe, in spite of these figures. The rainfall varies in different localities. On the sage-brush plains of the Columbia it averages only about six inches, which is less than in any other part of the United States except the extreme Southwest. The resulting dryness robs the summer heat and the winter cold of their worst effects. In the warmer part of the region snow falls rarely and seldom remains on the ground more than two or three days. Along the Columbia river ploughing can be done almost continuously, while at the higher elevations it is suspended from the middle of November to the middle of February. Cyclones, tornadoes, and blizzards are entirely unknown, and the frequent thunder-storms are so gentle as hardly to deserve the name. There is more or less wind at all seasons of the year. This is frequently strong enough to raise considerable

ARTESIAN WELL AT ZILLAH, WASHINGTON

dust during the dry season, and wind and dust constitute the disagreeable features of an otherwise delightful climate. There is probably no healthier region, nor one better adapted to people suffering with throat and lung troubles, than arid Washington.

The products comprise everything that grows in the temperate zone, including the tender fruits, which are here of great beauty and high flavor. The localities where the Yakima, Snake, and Wenatchee rivers empty into the Columbia furnish the earliest products, the season being fully a month more advanced than in the humid parts of the State. For this reason rare opportunities are offered in the way of market-gardening, which is an important consideration, as enabling settlers to obtain an income before their trees come into bearing.

The markets open to the small farmers who settle upon the irrigated lands of eastern Washington are extremely fortunate. They include the rich and growing mining districts of northern Idaho, of Montana, and of British Columbia, as well as home markets in the northern and western parts of the State. Nature has rather severely limited the district which can produce the early fruits, small fruits, and vegetables, while these mining regions must always be large consumers, and can never hope to supply themselves with early products. The improvement of railroad facilities will enhance these advantages. Strawberries, raspberries, cherries, pears, peaches, prunes, and apples, as well as all vegetables, find ready sale at high prices in these markets. The dairy industry is also profitable.

Settlement on the irrigated lands of eastern Washington has only begun, and is still far behind canal-building. Lack of industrial organization has hindered the prosperity of those who have come, and this in turn has discouraged further settlement. Land prices range from thirty to one hundred dollars per acre, with water-rights. The smaller and earlier canals were built by co-operative enterprise, but the larger and later ones represent investments of eastern and foreign capital. A beginning has been made in the construction of public works by means of the formation of irrigation districts under the State law.

The most important city in eastern Washington is Spokane, which lies near the border of Idaho. This is sustained by surrounding districts devoted to wheat-raising, mining, lumbering, and stock industry. The fall in the price of grain and horses has been a severe blow to the producers, and marks a transition stage in the life of the State. It will lead to the extension of irrigation, of small farms, of diversified production, and of co-operative industries. There is no more promising field for the application of the most enlightened methods of colonization than that offered by the rich and well-watered valleys of arid Washington.

Arid Oregon includes two-thirds of the State, and resembles its northern neighbor in many respects. It is less generously endowed with water supplies, and has been less fortunate in interesting capital in the construction of large irrigation works. There are, however, one hundred and fifty thousand acres of irrigated land in eastern Oregon, and it is estimated that this amount can be multiplied from ten to twenty times. The country is but sparsely settled, and has been mostly devoted to wheat and stock. The climate varies with the altitude, and is similar to that of Washington and the lower parts of Idaho. The rainfall is about fifteen inches, which is not more than half enough for profitable agriculture. There are no great extremes of either heat or cold.

The products are practically the same as those of Washington, except that the earliest vegetables and small fruits are more successfully cultivated in the low valleys of the latter. Small-farming and fruit-culture are successfully pursued wherever irrigation is provided. Indeed, the contrast with the prosperity of those who operate large farms in grain is very striking.

The writer recalls an experience in point. On one occasion he rode for hours through miles of farms devoted exclusively to wheat, which was raised at a loss, the proprietors generally going into debt for vegetables, poultry, and even dairy products, at the stores in the county seat. Then at Pendleton, on the same day, he inspected a little patch of irrigated ground—only three-quarters of an acre in size—which furnished a family with vegetables and small fruits, together with a surplus to be disposed of at the store and sold again to the thriftless farmers who raised only wheat. Here was a single cherry-tree, the product of which sold in the market for exactly the same price as the product of five acres of wheat! Ten or twenty acres of irrigated land in eastern Oregon are more valuable than twenty times as much farmed in grain and sold at the prices prevailing during the past few years. The little farm furnishes a certain living, with a prospect of something more; the large farm means drudgery, debt, and very often ruin. These economic facts having been clearly demonstrated to Oregonians in recent years, irrigation has become an important interest.

The State Commission, in its report to the National Irrigation Congress of 1894, made a careful estimate of the water resources of eastern Oregon. It was found that in the extreme southwestern part of the arid district, bordering the Cascade mountains, half a million acres could be watered by using supplies impounded in natural lakes, the most important of which are Upper and Lower Klamath, Summer, Albert, Warner, Goose, and Silver lakes. In the southeastern part of the State forty thousand acres are already commanded by sixteen irrigation canals. It was estimated that the irrigable area could be increased as follows: In the Snake River Valley, two hundred thousand acres; in the Malhuer River Valley, two hundred thousand acres; in the Willow Creek Valley, one hundred and fifty thousand acres; in Bully Creek Valley, fifty thousand acres; and in numerous other valleys, fifteen thousand acres. It would be necessary, however, to make provision for the storage of water to effect this result.

The Umatilla river in northern Oregon is one of the large tributaries of the Columbia. Here irrigation enterprise has been so active that at times more than the total flow of the stream has been appropriated. As yet most of the projected works have not been built, owing to the difficulty of interesting capital during the hard times. The region is fertile and picturesque, well supplied with railroad outlets, and certain to be benefited in time by improvements which will render the Columbia river navigable to the sea. A large area can be brought under irrigation, and the district seems likely to be the scene of the earliest colonization efforts. Still farther west is the region watered by the Des Chutes and John Day rivers. Here an area of two hundred miles in extent is susceptible of irrigation. The Hood river flows through a country which is not entirely arid, but which would be much improved by irrigation. The waters of this stream are likely to be turned upon the land during the next few years. Indeed, it seems probable that the irrigation industry will be extended to the higher valleys on the western slope, since the process has already begun in a small way in the valleys of the Rogue and Willamette.

The irrigation systems already in operation in eastern Oregon are generally applied chiefly to bottom and low-lying lands immediately adjacent to the streams. Where canals are extensive they are used for the production of hay and grain as an adjunct to stock-raising. There are a sufficient number of orchards and small farms to demonstrate the possibilities in this direction, but for the most part eastern Oregon is undeveloped. It is within bounds to say that it can readily make homes for a million people when irrigation is applied to the best advantage. The first impulse of a new era had begun to be felt in 1890, and rose rapidly until the panic of 1893. This impulse must again assert itself powerfully, and it seems not unlikely that this will happen during the next few years.

CHAPTER VI

THE POTENTIAL GREATNESS OF NEVADA

No other State has been so bitterly derided as Nevada. It has been asserted that the silver mines which made it all it was are exhausted; that it has no other mineral wealth; that it has no agricultural resources; that it has nothing to attract people, and that as a consequence it is "flickering out." These statements have found wide acceptance, and as a result newspapers and public men have seriously discussed propositions to deprive Nevada of its Senators, or to merge it into Utah, or otherwise to degrade it from its present place of statehood.

All these charges are untrue. Potentially, Nevada is one of the greatest States in the Union. It would be difficult to name one commonwealth east of the Mississippi river which surpasses it in physical endowments, and it even ranks well in this respect among the other States of the Far West, which it resembles in climate, soil, and variety of resources. It is true that Nevada has lost population since the decline of the great excitement on the Comstock lode, but it is not true that this decline is due to the fact that the State has not the raw materials of a rich, populous, and powerful community. The proper prescription for the economic ills of Nevada is not degradation, but development.

The silver mines which chiefly contributed to its prosperity in the past were principally those of the famous Comstock lode, which produced more than $500,000,000 in precious metals; of Eureka, $125,000,000; of Austin, $36,000,000; of Lincoln county, $30,000,000; of Esmeralda county, $20,000,000; of Elko county, $10,000,000. There were many other camps of lesser moment.

Now, it is perfectly true that the extraction of such vast amounts wrought material changes in the character of some of these mines, notably of the Comstock. It by no means follows, however, that the deposits of ore have been "exhausted." The richer ores were utilized at a time when silver commanded a high price and when economy in milling was not important. But it may be asserted upon the best authority that even the mines of the Comstock, some of which have been worked to a depth of three thousand feet, possess wellnigh unlimited quantities of ore running from $6 to $15 per ton, and that under more favorable conditions for silver mining the famous lode would perhaps duplicate its peerless record of the past. It is not likely that fabulous profits will ever again be realized. It is certainly not to be desired that the old romance of life in Virginia City, with its hot fever of speculation, its glittering successes, and its tragic disappointments, should be repeated. But though the bonanza days are of the past, the better days of sober industrial development are of the future. This statement applies yet more forcibly to other old camps.

With few exceptions, deep-mining has not been pursued. Only the richer ores near the surface have been utilized, and these by expensive processes and at high cost of transportation. Eureka, Austin and Tuscarora, and the districts in Lincoln and Esmeralda counties—all great producers in the past—are yet rich in silver ore averaging $8 to $20 per ton. Not only are the old camps far from "exhausted," but the undeveloped resources in this direction are far from explored. It is not denied by any one that admittedly great silver camps in Utah, in Colorado, in Idaho, and in Montana, have been compelled to cease operation partially or completely as a result of the depression of prices. The same is true of Nevada, but she also labors under peculiar disadvantages in the lack of transportation facilities. In the extreme southern counties mines have to ship ore to the reduction works at Salt Lake City at a cost of $15 per ton. There are other localities where the transportation charge ranges from $20 to $100 per ton, and where great ore bodies carrying $30 to $60 per ton in precious metals lie unworked in consequence. The prostration of the silver industry in Nevada is due to a number of causes, but the fact that the "silver mines which made her all she was have been exhausted" is not one of them, since it exists only in the imagination of those who know not whereof they speak.

The statement that Nevada "has no other mineral wealth" is equally wide of the truth. The actual extent and value of such resources in any country cannot be known in advance of thorough development, but the amazing variety of Nevada's natural endowments is a fact which no well-informed person ventures to dispute. Calling the roll of the fourteen counties, we may see that nearly all answer to the truth of this claim.

Elko, in the extreme northeastern corner of the State, where the railroad traveller enters from Utah, yielded placer-gold to the earliest prospectors of the Great Basin, and has gold ledges of promising extent and value which are now being carefully explored. Humboldt, central on the northern boundary, presents as great a variety of resources as any district in the United States. Besides silver, it possesses gold, copper, lead, tin, iron, antimony, nickel, cobalt, bismuth, nitre, sulphur, gypsum, borax, soda, and salt. Coarse gold to the value of several millions has been taken from its placer and gravel mines. Gypsum is shipped to San Francisco for fertilizer. Near Lovelock, in this county, are great hills of fine bessemer iron ore, yielding eighty-six per cent. of iron and twelve per cent. of aluminum, with no trace of impurities. Eureka county, in the central part of the State, has many mines in which gold predominates, besides large deposits of magnetic iron ore, of lead, of granite and other building stones. Lander, adjoining Eureka on the west, has valuable undeveloped gold deposits and the richest mines of antimony in the world. Of the western counties, Washoe reports recent discoveries of gold, copper, and iron; Douglas, quartz and placer-gold; Lyon, mines which run high in gold, with but little silver; Churchill, gold, copper, and other minerals; while Storey contains the Comstock. Esmeralda, bordering California on the extreme southwest, is very rich in gold-bearing quartz, and is being actively developed. Lincoln and Nye, the two great counties of the south, have gold, copper, lead, antimony, zinc, quicksilver, fire-clay, chalk, soapstone, borax, and alum. In Lincoln there is a deposit of zinc, estimated to be worth several millions, which cannot be worked because of lack of transportation facilities. There are hills of salt, the product of which commands locally but $1 per ton, owing to its inaccessibility, though other localities in the State pay $20 to $40 per ton for a similar product. White Pine county, along the eastern boundary, has extensive gold placers.

Finally, there is a large deposit in Elko county of something which is said never to have been discovered elsewhere—mineral soap, superior in cleansing virtues to any of the manufactured varieties known to the students of modern advertising. As the country was principally occupied by Piute Indians, the deposit remained undisturbed for nameless centuries. But it was exhibited at the World's Fair, where, it is feared, it added nothing to Nevada's fame. The thing was so palpably and unmistakably the perfection of toilet articles that it overtaxed eastern credulity, and was quietly set down as a larger piece of mendacity than of soap.

It is further charged that Nevada "has no agricultural resources." Of all arraignments, this is the most mistaken and unjust, yet it is the one which will find readiest credence by those who know the State only through the experience of a restless day's travel by railroad across its waste of sage-brush, of sunshine, and of dust. The more need, then, for its emphatic refutation, for there are millions of Nevada acres which might answer the cry of thousands of homeless men.

The territorial grandeur of the battle-born commonwealth is not a matter of dispute. In the East it would fill a space from central Pennsylvania to Georgia, and from Delaware Bay to Ohio. But as Nevada is very arid, having but ten inches of rainfall, and but little of that in the growing season, the extent of the water supply is the measure of its capacity to support population. Upon the all-important subject of the water supply of an arid and half-explored country authorities seldom agree. They cannot do so in advance of thorough scientific investigation, especially where the dependence is largely upon flood waters, springs, and artesian wells. But the most painstaking and systematic inquiry ever made into this branch of Nevada's resources resulted in the conclusion that at least six million acres of rich soil could be irrigated.

Such was the report of a State Commission, appointed under the auspices of the Irrigation Congress in 1893, of which the late Governor John E. Jones was chairman and L. E. Taylor, C. E., secretary. The material for the report was gathered with the assistance of sub-committees in every county, and the conclusions undoubtedly represent the best judgment of practical men intimately acquainted with the subject in its local details. The estimate is based on the use of storage reservoirs and the development of springs and artesian basins, as well as upon the surface supplies more readily to be calculated. The commission reported twenty lakes and sixteen rivers of importance. Of the utility of the latter, it said that the Carson, Walker, and Truckee, flowing eastward from the Sierras, would irrigate in Nevada one million acres; the Humboldt, another million; the Salmon, Bruneau, and Owyhee, in the extreme northeast, four hundred thousand; the Quinn, which descends from its Oregon sources into Nevada, one hundred and seventy-five thousand; the Virgin, on the extreme southeast, one hundred thousand. Minor rivers and a multitude of flowing springs were counted available for the reclamation of two million four hundred thousand acres, while the artesian supplies were relied upon to bring the total for the State to at least six million acres.

The authors of these conclusions, among the most responsible men in the State, declare them to be well within the bounds of conservatism. For the present purpose, however, the figures may be reduced two-thirds, and still leave an ample foundation for population in Nevada. Two States which no one dreams of expelling from the Union are Colorado and Utah. The splendid agricultural prosperity of those arid commonwealths is based on a cultivated area of only about two million acres. There is no excuse for assuming that with a reasonable development of her resources, mineral and manufacturing as well as agricultural, Nevada could not sustain at least as many people as do Utah and Colorado in their present condition of partial development. Neither of those States has begun to approach the full realization of its possibilities, though even now they maintain a combined population of about three-quarters of a million. This figure is a low estimate of Nevada's capacity in that direction.

The products of the irrigated lands of Nevada are the fruits, vegetables, cereals, and grasses of the temperate zone, and, in the extreme southern portions, the more delicate fruits of the semi-tropics. Average crops are thirty-five bushels of wheat per acre, sixty bushels of barley, seventy-five bushels of oats, three hundred bushels of potatoes, and four to eight tons of alfalfa, which is the leading forage grass. In the extreme southern counties, where the altitude is but four hundred feet above sea-level, and where the warm breath of the Gulf of California is received through the canyons of the Colorado river, figs, olives, pomegranates, almonds, English walnuts, and, in sheltered places, even oranges, may be produced, according to the testimony of old residents. The climate of Nevada, as the products would indicate, covers a wide range. Like all parts of the arid region, it is distinguished by pure, dry air, an extraordinary amount of sunshine, and consequently a very high degree of healthfulness. It is a climate fit to breed a robust and vigorous race.

These are not the popular impressions of Nevada, but the traveller who has left his hot and dusty car to breathe the cool fragrance of the little oasis at Humboldt, to walk for a few moments within the shade of its trees, and to hear the music of its waters, should not hesitate to accept them as true. The little patch of green which a hill-side spring has spoken into being here is a sample of what millions of desert acres will become. Farther on the traveller catches a twilight glimpse of the thriving farms of Lovelock or of the green Truckee meadows. But the larger examples of irrigation lie off the beaten path. Such an instance is the Carson Valley, hidden between the sheltering shoulders of the Sierras. To appreciate the possibilities of this derided State, the critic should visit that valley in the perfect Nevada spring-time, and look upon its farms, its homes, and its villages. There he would behold a memorable picture of thrift, of beauty, and of peace, from the white blossoms in the door-yards to the white summits of the mountains. And there he might read the true prophecy of Nevada's future.

If, then, this State is "flickering out," it is emphatically not due to the fact that it "has nothing to attract people." Resembling Utah and, less closely, Colorado in climate and resources, there are reasons which account for its poverty of population and backwardness of development in comparison with those growing States. It is, perhaps, worth while briefly to review them.

The men made rich by the mines of Colorado had the gratitude and patriotism to spend their money where they made it. Tabor gave Denver its first important impulse by erecting splendid buildings as monuments to his faith in the city's future. Hagerman planted the Midland Railway on the Continental Divide, and invested millions in reclaiming arid lands tributary to Colorado commerce. General Palmer, the railroad pioneer, founded Colorado Springs, encouraged improvements in every direction, and built his home in the State which had rewarded his daring enterprise. Such was the spirit of most of the successful Coloradans towards the country which gave them their opportunities. The wealth taken from the mines and railroads of Nevada, on the other hand, contributed nothing to the embellishment of its cities or the conquest of its waste-places. It went to build palaces in San Francisco, New York, and London, and to increase the social gayety of Newport and Paris. It would not be just to infer that the difference in the attitude of the two sets of millionaires was wholly due to their individual characteristics. Circumstances had much to do with it, notably the fact that in Nevada the mining industry was mostly concentrated in a single great camp, which enhanced its speculative character, and the fact that the superlative attractions of California lay within a few hours' ride of Virginia City. But the difference, nevertheless, wrought momentous results in the fortunes of States.

The railroad situation is another important factor in the backwardness of Nevada. Whenever a single railroad controls the inlet and outlet of a State, the industrial and commercial destinies of that State are, to a large extent, committed to the keeping of that railroad. These facts are further emphasized when it happens that the railroad runs through agricultural territory and possesses a land grant covering every other section for a distance of twenty miles on both sides of the track. Development necessarily hinges on the policy of the railroad, both as to rates and as to the encouragement of enterprise. The only alternative is to build a competing line, and this is extremely difficult if the construction of the first has not resulted in the development of the country and the growth of its population. Nevada in a flourishing condition would invite competition not merely for its own business, but also for the rich spoil of California's traffic. Nevada as a stretch of hopeless desert, on the other hand, constitutes a perfect insurance against competition for the larger prize on the farther side of the Sierras. It has not been the policy of the Central Pacific to make this "risk" extra-hazardous, or to increase its cost, by developing the territory between Utah and California. It is sometimes charged that the Central Pacific is distinctly hostile to Nevada. The probable truth is that, having the interest of their whole great system to consider, the managers arrange their policies according to the dictates of shrewd business sense, and that Nevada has merely the ill-fortune to be pinched in the process. If it would have paid the Central Pacific better to develop the State than to let it remain a wilderness, it would have been developed. Just criticism should be directed to the system which permits the private ownership of public highways, and not against individuals, since human nature is everywhere much alike.

Utah was developed without the aid either of railroads or millionaires, but Utah has had a colonization policy from the beginning down to the present hour. If Brigham Young had not recalled his colonists from the valleys of the Carson, the Walker, and the Truckee during the fifties, no one would now complain of decreasing population—a sin never charged against the Mormons. The difference between the sister States of the Great Basin is not an affair of raw materials. It is the difference between the results of speculative mining, on one hand, and of the patient development of agricultural resources by methods of sober industry, on the other.

Nevada is the victim of circumstances. Rich in the potentialities of material greatness, and therefore strong in the capacity to support a social structure, it presents the baffling paradox of declining population in a western State. If it were located in South Africa, the nations of Europe would plot and struggle for possession of its minerals, lands, and waters; if in New South Wales, the colonial government would employ the public capital to reclaim its deserts and to enable the surplus population of Adelaide to make homes upon its soil; if in Germany, the Imperial government would charter "rent banks" to operate under a commission in preparing the land for settlement and building humble houses, to be purchased by home-seekers on generous terms ; if in Holland, the servants of the little Queen would extend the admirable colonies which have flourished for seventy-five years, graduating thousands of needy men from beggary to tenantry, from tenantry to proprietorship. But Nevada is in the United States, and the remedy for its misfortune is—to deprive it of its Senators!

If anything is to be done for Nevada the impulse must come from without. Ninety-five per cent. of her great area is public land and the property of the nation. The present land laws were made in ignorance of the conditions imposed by aridity, and are practically unsuited for any honest and intelligent purpose of home-making. The citizenship of the State is composed of miners, who care nothing for agricultural expansion ; of farmers, who are not anxious to foster competition ; of stockmen, who want undisturbed possession of water privileges for their herds ; and of merchants and professional men who are helpless to turn the wheel of progress. Congressman Newlands made an elaborate effort to awaken interest in irrigation development a few years ago, offering to back it with his large means, but it came to nothing because of public indifference and subtle opposition. The same conditions prevented the strong effort of the late Governor Jones—a man who had the progress of his State deeply at heart—from reforming the water laws and providing an irrigation administrative system. It would not be difficult to suggest palliative policies which would help to turn the tide in the right direction. For instance, certain favored districts might be withdrawn from settlement under present laws, and granted under special inducements to organizations like the Salvation Army, or Commander Booth's Volunteers, who might reclaim and colonize them in co-operation with philanthropic persons. But the truth is that Nevada's decadence is due to economic evils common to the arid region—to evils which call for deeper and broader measures than can be applied to any single locality.

CHAPTER VII

WYOMING, LAW-GIVER OF THE ARID REGION

A SINGLE railroad traverses the length of Wyoming, taking the traveller through that portion of the State possessing the least attractions in the way of scenery and development. As a consequence, thousands of people who have made the transcontinental journey think of this new commonwealth as a barren wilderness of withered grass and stunted sage-brush, with an abundance of rugged mountain views along its southern horizon, but without visible means of support for population save a few cheerless trading towns and grimy coal-mining camps. These tourists find the altitude disagreeably high and the atmosphere generally chilly, if not cold. They behold no cultivated fields, no homes framed in trees and vines; hence do not marvel that the population of this vast State is no larger than that of fourth-class cities in the East.

Spite of this popular prejudice, which may hardly be complained of as unreasonable, Wyoming is a very great State in its natural resources, and must some day sustain a population as large as that of Ohio and Illinois. If its first railroad had penetrated its central or northern counties it would even now be as celebrated and as populous as Colorado. Because of its stores of coal and petroleum it is frequently called the "Pennsylvania of the West." Its deposits of both base and precious metals are extensive and widely diffused, though the present output is small, owing to the cost of transportation and the fact that mining capital and enterprise have been attracted elsewhere by the greater fame of other localities. It is well endowed with forests and blessed with the noblest scenery, of which the far-famed grandeurs of the Yellowstone Park furnish the best example. But its greatest resources are those of water and of land. It is estimated that not less than ten million acres of fertile land may be reclaimed by irrigation. Distributed rather evenly through different portions of the State, and surrounded by the wealth of mine, forest, water-power, and natural pastures, this irrigable land will furnish the solid foundation of a great and manifold economic life in future centuries.

The great industry of Wyoming from the time of its first settlement has been stock-raising. Its agriculture has been mostly auxiliary to this. Herds of horses, cattle, and sheep are grazed upon the enormous free pasture or range from spring to autumn, and then fed upon the native or alfalfa hay raised in the irrigated valleys. This industry has been the source of local prosperity and enlisted great sums of eastern and foreign capital. It is a pursuit which does not develop the higher possibilities of the country, either in a material or social way, and so long as its influence strongly dominated the life of the community Wyoming did not furnish an attractive field for settlers. There was a time when prominent men actually deprecated the growth of population, and boldly asserted that brute cattle were more to be welcomed than men, women, and children in that sparsely settled empire. In the last few years, however, the tendency of public thought and political action, consequently of development, has been distinctly away from barbarism and towards civilization.

What is rather grotesquely known as "The Rustlers' War" of 1892 had much to do with the changed conditions. Properly speaking, it was not a war, but a raid, which ended disastrously so far as its immediate purpose was concerned. Individuals and companies owning large herds of horses and cattle had suffered repeatedly from the depredations of thieves or "rustlers." They had often apprehended the culprits and sought by every means in their power to punish them through the courts. But the cases were tried in counties where public sentiment strongly opposed the great cattle-owners. The result was that no jury could be found to convict. After a long and exasperating experience of this kind the large stock interests determined to try a heroic remedy. They fitted out an expedition, consisting mostly of rough characters from Texas, and thoroughly armed it, even a Gatling gun being included in its equipment. The expedition was led by prominent and wealthy citizens and accompanied by a young English lord in search of a new sensation.

A considerable number of "rustlers," who were settlers living in lonely places with small bands of cattle or horses, were marked for "removal," or, plainly speaking, for murder. The expedition set out blithely enough, harboring no doubts of its complete success and not dreaming that any obstacle could be interposed to its formidable array. The first two "rustlers" encountered were found conveniently at their cabin doors and promptly despatched, though they died with their guns in their hands and were able to make a feeble response to the overwhelming numbers. But beyond these two assassinations the expedition was unsuccessful. The small settlers throughout the region were in sympathy with the men marked for death. The news of the "invasion" spread with incredible swiftness, and before the expedition could reach the homes of other intended victims the "rustlers" and their farmer allies, under the aggressive leadership of Jack Flagg—a noted character in the neighborhood—rallied in large numbers. They surrounded the "invaders" at a farm-house, and would have exterminated them to the last man except for the timely arrival of a troop of United States cavalry from the nearest fort. After several months of delay, the powerful political influence of those who had organized the expedition succeeded in setting its members free without serious punishment.

Public opinion differed much as to the justice of this bold effort to dispose once and for all of the annoying and costly evil of cattle-thieves. By some it was regarded as the irrepressible conflict between the irrigated farm and the free range. These thought that the real animus of the affair lay not in the just complaint against a few thieves, but in the fixed determination of those who profited from the unrestricted use of the public lands to prevent, at any cost, further settlement by honest farmers. On the other hand, there were many good citizens, men who had not hesitated to risk their fortunes in constructing irrigation works for the very purpose of opening certain valleys to settlement, who did not hesitate to defend the expedition as the only possible means of ending an intolerable condition in the State. The writer has taken pains to gather testimony years after the event, when angry passions had wholly passed away, and found excellent evidence of the fact that those who were selected for extermination at the hands of the "invaders" were actually cattle-thieves; that it was clearly impossible either to end the evil or to stop its growth by appeal to the courts; and that farmers who settled in good faith were never molested by the large stock interests.

However, the political control of Wyoming speedily changed hands as the result of this dramatic episode. The party in power at the time of the event was voted into retirement, and the party which denounced the "invasion" as a savage and unmanly attempt to make widows and orphans of the wives and children of those who honestly sought homes in the public domain was installed in the Capitol at Cheyenne. The probable truth of the matter is that wealthy cattlemen had a real grievance which they could not adjust peacefully without years of patient waiting. They felt perfectly justified in their consciences in resorting to violence. They believed the result would be favorable to the prosperity and good name of the State. This actually proved to be the case; but in a very different way from what they had anticipated. It drew attention in a startling manner to certain evils inseparable from the open range and put these evils on the road to ultimate settlement through Congressional action. It broke the power of what was doubtless justly known as "The Cattle Ring" in State politics. It gave an impulse to better forms of development and a healthier tone to public thought. Above all, it taught the men of the frontier the great lesson that this is a government of laws and institutions, and that nothing is to be gained in the end by resorting to violence, at least when nothing more precious to humanity than the ownership of dumb brutes is the issue involved.

The irrigation development of Wyoming is distributed over a wide area. As has already been said, it has grown up mostly as an adjunct to the cattle business. The water supply is very abundant, and admitted of the construction of many cheap canals by settlers, without the assistance of outside capital. Grass, grain, and vegetables are the principal crops, but the State annually sends from half a million to one million dollars beyond its borders for agricultural products. This is due in part to the fact that the chief farming centres are widely separated from the principal towns and not connected with them by railroads. It is due also to the fact that small-farming has not yet been undertaken to any extent, and that farmers produce mostly only what they can feed to cattle or sell to others having cattle to feed.

The most active agricultural region is in the north-central portion of the State, in Johnson and Sheridan counties. It was from this district that the marvellous wheat, barley, and oats were sent to the World's Fair at Chicago—products which astonished Eastern farmers and won the highest prizes. Here, as indeed throughout the State, the farmers are highly prosperous. They have never known the miseries of their drought-stricken neighbors so close at hand in Nebraska and Dakota. Selling their product at home, they have not felt the burden of transportation charges, nor had their prices much reduced by the glut of cereals in the world's market.

The earliest irrigation work of great importance was that at Wheatland, sixty-five miles north of Cheyenne. This was undertaken by local capitalists, headed by ex-Senator Carey. After surviving many difficulties, it has at length entered upon a period of real prosperity and created the finest agricultural colony in the State. It is interesting to note that many of its people represent the overflow of the famous Greeley Colony in neighboring Colorado. Although less than a generation from its founding, Greeley already has surplus people to send forth for the conquest of waste places a little farther off.

The most notable recent enterprise in Wyoming is that undertaken in the Big Horn Basin by the famous scout William F. Cody, familiarly known as "Buffalo Bill." This energetic and ambitious man, who has twice won fame—first as a daring and successful scout, and then as exhibitor to two continents of the life, people, and customs of the Wild West—is laying broad and deep the foundations of a stronger claim to remembrance. He conceived the idea of planting civilization in one of the wildest regions which he had first known as hunter and Indian-fighter. The money which the public has poured into the coffers of his Wild West Show, Cody has used in reclaiming and colonizing two hundred thousand acres in the valley of the Shoshone river in northern Wyoming, twenty to sixty miles from the Montana line and immediately east of Yellowstone Park. The altitude here is only about four thousand feet, and the climate suited to the production of diversified crops, including hardy fruits. It is also the finest of cattle countries, and is surrounded by an abundance of mineral and timber. Its products find ready sale in the large and growing mining-camps of the neighborhood, as well as of Montana. In time the region must acquire a large population and support a many-sided industrial life. It will be a very substantial monument to William F. Cody and his work for the West.

Wyoming possesses a distinction entirely apart from its rich endowment of mineral resources and different from that of any of its sister commonwealths. It is recognized as the law-giver of the arid region. It is the State which has contributed most to working out the legal institutions on which a great future civilization will rest throughout western America. In this respect its position of leadership is alike unapproached and unchallenged.

Those who live in the humid portions of the United States cannot realize the full significance of this fact. In the arid West water is gold. The struggle for its possession has been marked by dramatic interest and even pathos, wholly apart from its economic character. Indeed, the control of water for irrigation is so interwoven with the existence and well-being of society in the West that it may almost be said to include every human interest. Men may own estates of equal size and fertility lying side by side. The one who came earliest claims the water supply, which may be barely sufficient for his own land. With this water supply he makes his place blossom with large and regular crops, and is rich. His neighbor, with the same kind of soil and climate, is doomed to perpetual poverty. Water has made all the

FURROW IRRIGATION FOR VEGETABLES AT EXPERIMENT STATION, WYOMING

difference between success and failure—between plenty and starvation. Under these conditions it becomes a matter of the highest possible moment to provide for the just distribution and the economical and proper use of so much water as may be available. In the arid region as a whole there is at least five times as much land as water for its reclamation. There are certain valleys where the water supply is more than sufficient for the amount of land it can command, but these are rare exceptions.

It would be natural to suppose that the first object of western statesmanship would have been to provide laws and methods of administration calculated to conserve and protect the water supply, to the end that it might be used for the greatest good of the greatest number. No perfection of laws which a State may confer upon its citizens in any other respect can make amends for any injustice it may inflict, by acts either of commission or omission, in connection with this most precious of all natural gifts. Of land, minerals, timber, sunshine, and air there is plenty and to spare; of water there is little enough, even in the early stages of settlement, and its value must increase with the gain in population. It is true public policy—aye, the very measure of the growth and wealth of communities—to have the water so granted and so applied that it may serve for the permanent reclamation of the utmost acre of land; for the building of the utmost home; for the sustenance of the utmost family.

Our statesmanship failed almost entirely to take into account this most vital concern of western civilization. It imposed upon the arid region the common laws of England, framed for a country which needs drainage rather than irrigation, and suffers from too great an abundance of water in the clouds above and the earth beneath. The result has been the most disheartening struggle among farmers and settlers which could be imagined. Lawyers have grown rich upon it, but the producing classes have been impoverished, and the men of enterprise who sought to broaden the foundation for civilized society in our western valleys have been discouraged and driven out of business. Stream after stream has been appropriated over and over again, and, in compliance with stupid laws, courts have calmly confirmed grants to water aggregating many times the entire volume in the channel. Then they have left the farmers to fight it out among themselves, sometimes with rival attorneys, sometimes with shot-guns. Cases have gone from court to court, and the same issues have been tried, retried, and tried again. Litigants defeated upon these trials have ignored judicial decisions and taken out their neighbors' head-gates and dams in defiance of injunctions and decrees. So the battle has gone on from year to year, with victory at last for those who could longest withstand the drain for legal expenses.

This was the condition in Wyoming when Elwood Mead came upon the scene and assumed the duties of Territorial Engineer. A native of Indiana, he had moved to Colorado in earliest manhood and was at once attracted by the irrigation possibilities of the country, in which he saw opportunities for usefulness and distinction. He served for a time as a member of the faculty of the Agricultural College of Colorado, and there learned the science of irrigation in its relation to the growth of crops. He also became an assistant in the office of State Engineer, which gave him an insight into water laws and practice. The moment of his arrival in Wyoming was most fortunate. The Territory was about to become a State, and its fundamental laws and institutions were to be made out of hand. The young engineer had already formed strong convictions as to the laws which should govern the appropriation and use of the water supply. These convictions he succeeded in impressing upon the work of the Constitutional Convention, and, later, upon the acts of the Legislature. He became the first State Engineer of Wyoming, and succeeding Governors kept him in office, with the strongest public approval, until the Agricultural Department at Washington called him into its service in order that his abilities and experience might be applied in a wider sphere.

Mr. Mead insisted that with the birth of the new State every old water-right should be adjudicated upon the basis of the amount of water actually applied to a beneficial use. It mattered not how much the appropriator had originally claimed by posting a notice on the bank of the stream and placing it upon the county records. He may have claimed ten times the amount of water he put upon his land, and so prevented others from obtaining it to develop new farms. Or he may have put upon his land twice as much water as the crop really required. Whether he did this through ignorance or through greed was of no consequence, since the result was equally detrimental to the community in either case. By means of this vigorous action the evil which has caused so much suffering and cost so much money in other western States was cured at a stroke in Wyoming.

The State Engineer then proceeded as rapidly as possible to measure every stream used for irrigation, and to prepare diagrams showing their flow at different seasons of the year. When new appropriations were filed, these diagrams and records became very useful, as showing the amount of water unused and therefore available for the needs of new settlers. Thus there was no danger that more water would be granted away than flowed in the stream, which is the ridiculous condition in many other localities. The same rule was applied to the enlargement of old canals. Such enlargements could not be made without the consent of State authority, and before this would be given it must be demonstrated that there was actually a surplus in the stream to fill the enlarged canal.

Elsewhere reservoirs, dams, and canals are constructed without any public supervision. In Wyoming all plans and specifications must first be submitted to the State Engineer, in order that he may judge as to whether they are in accordance with public policy, by making the best use of the water supply and by conserving life and property.

These wise laws could be of little effect unless enforced and carried out by an adequate system of administration. This was also provided under Mr. Mead's influence. The State Engineer is the head of the system, and he has two assistant engineers. The State is divided into four large divisions, corresponding to natural hydrographic districts, and over each a division superintendent is placed in charge. These divisions are then organized into several subdivisions, with a water commissioner over each. In Division No. 1 there are fourteen subdivisions; in Division No. 2, six; in Division No. 3, two; in Division No. 4, three. The water commissioners are vested with police powers, and personally see that the water is turned into the head-gate of each canal in accordance with its legal claims. There is no opportunity for neighbors to go to law, or even to shoot each other. The exact amount of water to which they are entitled, upon the basis of beneficial use under economical methods, was determined at the beginning, and this amount is meted out to them by officials having no interest in local contentions.

These laws and this administrative system have not only given peace and prosperity to the irrigation industry of Wyoming, but are regarded as models the world over. Other States have copied them extensively, and there can be no question that in the end they will become common to the entire arid region. Colorado was also a pioneer in this same field, but neither its laws nor its administrative system are equal to those of Wyoming. There constant litigation has caused loss and hindered development, yet, with the exception of Wyoming, no other State has done so much to illustrate the better possibilities of water control than Colorado. Idaho, Nebraska, South Dakota, Kansas, and Washington have enacted portions of the Wyoming laws. In all the other States, with the single exception of California, the example of Wyoming has produced results, and there is hope that even California will learn in time that irrigation and litigation are not necessarily synonymous terms.

When Wyoming, in common with the other arid

States, received a grant of one million acres, to be reclaimed under State control, Mr. Mead proceeded at once to apply his ideas of public supervision to this grant. Upon his recommendation the legislature provided that these lands should be reclaimed by construction companies upon conditions which furnished the best security to the capital employed, yet provided at the same time for the sale of lands to actual settlers and for their ultimate ownership of the canals. A maximum price was fixed for water-rights, which were made inseparable from the land. Other States copied the law *verbatim* from the statute-books of Wyoming.

Aside from the great work accomplished by Mr. Mead in reforming the irrigation laws and customs of the West, Wyoming has made another contribution of large importance to the country's progress along this line. Two of her United States Senators, Joseph M. Carey and Francis E. Warren, have identified themselves conspicuously with great measures calculated to create homes for millions. Senator Carey was the author of the Act of 1894, commonly known as the Carey Law, which gave one million acres to each of the western States upon condition that the land be reclaimed and settled within ten years. Senator Warren is the leader of the new and growing movement which aims at Federal appropriations to be used in the construction of great reservoirs beyond the reach of private enterprise. With signal ability and devotion these two Wyoming statesmen have labored for years to open the arid public domain to settlement; to solve the vexed questions arising from the unrestricted use of the open range; and to provide enlightened legislation for the protection of the forests so important in connection with irrigation.

Wyoming's place as the law-giver of the arid region is due neither to geographical location nor to superior natural resources. Certainly it is not due to large population. It owes its commanding position solely to the character and ability of a few public men who happen to have found in this line of work their best opportunities for usefulness. As a result of this fortunate circumstance, Wyoming occupies among western States at the beginning of the twentieth century a relation not unlike that which Massachusetts and Virginia held to the States of the Atlantic seaboard at the beginning of the nineteenth century.

CHAPTER VIII

THE PROSPERITY OF MONTANA

MONTANA is a State of magnificent resources. The first white men who ever saw it — French explorers in the middle of the eighteenth century—called it "The Land of the Shining Mountains." The appellation is true as well as poetic, for it is the possession of its snow-capped ranges, reflecting the light of the brilliant sky, which differentiates Montana from the adjoining prairie States of the Northwest. It is the mountains which hold the wealth of waters and minerals and make the character of the climate.

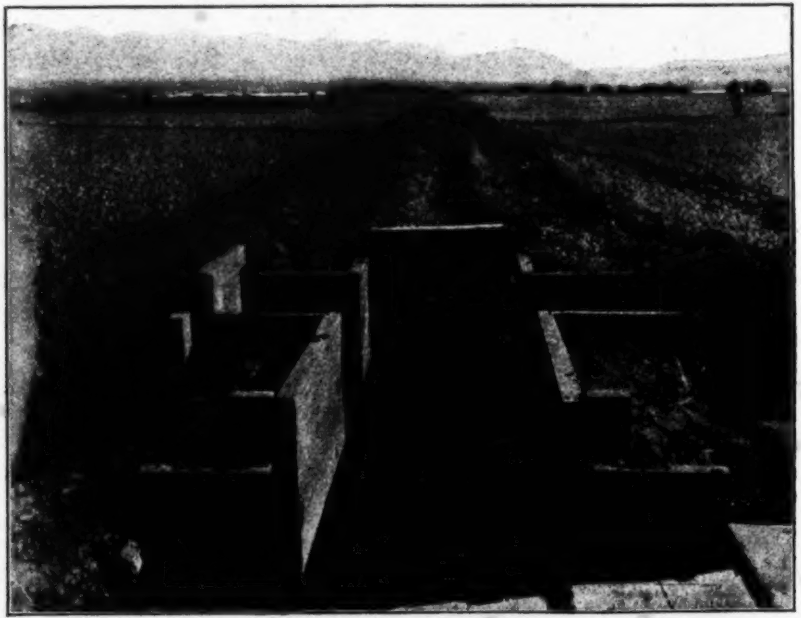
Montana ranks third in point of area among American States, and third in the value of its annual mineral output. It is yet too early, by many years, to estimate its final place in extent of population and agriculture. To-day mining is the first of its industries, stock-raising the second, agriculture the third. Mining gave the impulse to its settlement and is the backbone of its prosperity. The forty millions of dollars annually taken out in copper, lead, gold, and silver make it one of the most prosperous of western communities. The discovery of new mining districts steadily continues, and the flow of wealth from this item of the State's resources will endure indefinitely. The conditions of the stock industry are very similar to those which we observed in Wyoming. Of the total population of about two hundred thousand, the farmers are a small minority. Nevertheless, irrigation is recognized as one of the most important interests of the State, and the field open to settlement offers many attractions.

The first ditches in Montana were made for the purpose of washing gold-bearing gravel along the bars and gulches. When their usefulness in this direction was exhausted they were turned into irrigation canals by the farmers who came close upon the heels of the early miners. For many years development was limited to works of this humble character. Farmers had their own individual ditches, or combined their labor in making canals sufficient to water small districts. In this manner most of the mountain streams capable of easy diversion were utilized. As in Wyoming, irrigation was largely used as only an adjunct to stock-raising. In recent years legitimate agriculture has begun to make rapid progress. Large capital has been invested in a few comprehensive irrigation systems, notably in the valleys of the Dearborn and the Sun rivers, north of Helena.

Montana is divided into three natural drainage areas—those of the Missouri and Yellowstone rivers on the east of the main range of the Rockies, and that of the waters tributary to the Columbia on the western slope of the mountains. The eastern slope embraces the fertile valleys of the Yellowstone, the Gallatin, the Madison, the Jefferson, the Beaverhead, the Prickly, and the long valley of the Missouri, with the Milk-river system in the extreme north, on the border of Canada. The western slope is mountainous and heavily timbered, with comparatively small though fertile valleys. The principal streams are the Flathead, Clarke's Fork of the Columbia, and the Kootenai. The ultimate extent of irrigable land within the boundaries of Montana is purely speculative, estimates ranging from ten to thirty million acres. In the matter of water supply the State is among the most fortunate in the West, though its full utilization will require vast expenditure for the construction of storage-works and of long canals. Some of the largest rivers, like the Missouri and the Yellowstone, are enclosed by high bluffs, and water can be taken to the elevated plains, comprising the larger areas of valuable land, only by means of diversions made high up upon the streams.

The opportunities which Montana offers to settlers have not been appreciated as they deserve. This is doubtless due to the severity of the climate, which is generally misunderstood. The State is in a high latitude, and does, indeed, experience cold winters. But its valleys are comparatively low, averaging much lower than those of Wyoming, Colorado, Nevada, and Utah, and its climate decidedly healthful. The thermometer goes twenty or thirty degrees below zero in the winter, but this degree of cold in the dry air of Montana is much less disagreeable than ten degrees above zero in any of the cities on the borders of the Great Lakes. On the other hand, the State enjoys a remarkably even prosperity, and no other localities offer better certainty of home markets, where the products of the farm can be disposed of at good prices.

There are many large and growing towns, and two or three cities of considerable size. The mining popula-



DIVISION BOX AT BOZEMAN, MONTANA, SHOWING METHOD OF TURNING WATER INTO LATERALS FOR IRRIGATING THE FIELD

tion is destined steadily to increase, while manufacturing must begin in earnest during the next decade. The wheat, rye, oats, and vegetables produced in the irrigated valleys are remarkable both in quantity and quality. The brewers of Brooklyn, New York, selected the Manhattan Valley for important agricultural operations, because they found it would grow the finest barley in the world. Small fruits are prolific and of fine flavor.

Even the orchard fruits, especially apples and plums, are produced successfully in the more sheltered valleys. The exhibits which one sees at county fairs, particularly at those on the western slope in valleys like the Bitter Root, make surprising revelations of the fruit possibilities in this northwestern State. But the settler's chief opportunity will be found in supplying the common farm products required by the large and growing population in the cities and towns. Of the present local consumption, forty per cent. of the flour, ninety per cent. of the pork, bacon, and ham, ninety-two per cent. of the lard, thirty per cent. of the butter, ninety-eight per cent. of the cheese, and forty-three per cent. of the eggs are now brought in from elsewhere. When these facts are considered in connection with the cheap land, abundant water supply, and healthful climate, it is apparent that Montana offers great attractions to colonists.

The Gallatin Valley, southeast of Helena on the main line of the Northern Pacific, is the most famous agricultural district of Montana. It is well settled, with a class of thrifty farmers engaged in producing a variety of ordinary crops. Bozeman, the county seat, is the home of the State Agricultural College, and this institute has done much to raise the standard of irrigation and of farming in the locality, and thus to enhance the valley's prestige. The Missouri Valley, in the neighborhood of Great Falls, and the Bitter Root Valley about Missoula, are other well-developed districts. Crops are generally planted in April or the first half of May, though sometimes in March. The spring rains continuing until the middle of June, irrigation does not begin until that date. Cattle, sheep, and wool are shipped to eastern markets, but other products are consumed within the State.

While copper and the precious metals are the chief mineral products of the State, it is rich in lead, iron, coal, building materials, and precious stones. It is estimated that an area of not less than fifty thousand square miles is underlaid with bituminous or lignite coal of good quality. Coke is a growing product. The State is also rich in forests and abundantly supplied with natural water-power. It has, in a word, all the materials of a diversified industrial life.

The social and political life of Montana is vigorous and interesting. Both the climate and the industries are calculated to breed a sturdy and self-reliant people. Helena, the capital, located in what was formerly known as Last Chance Gulch, has long enjoyed the reputation of being the richest city in proportion to its population in the world. Butte is still larger—the largest mining camp in the United States. These two leading towns present radically different aspects of western life. Helena is the political and social capital, Butte the grimy centre of industry. Both have enjoyed phenomenal prosperity, and escaped, to a large degree, the relapses which have afflicted other ambitious western cities at various times.

The truth is that Montana has been, and is yet, a marvellously substantial State. It has enjoyed a steady stream of wealth from the mine, the range, and the farm. Its mercantile enterprises have naturally thriven under these conditions, and labor has been busy and well paid. It has not been the policy of the people to encourage immigration on reckless lines merely to increase the population. On the contrary, the public sentiment has been notably conservative, and has only urged those to come who could be self-supporting by tilling the soil or establishing other industries.

Great Falls, located at the most eligible water-power of the Upper Missouri river, has enjoyed a remarkable growth of population, and promises to become in time one of the great cities of the West. In addition to the water-power, it has the advantage of being surrounded by the raw materials of manufacture, in the shape of coal, iron, timber, and the products of the range—such as wool and hides—while large agricultural districts are tributary to it. There are many important towns along the line of the Northern Pacific and the Great Northern railroads. Of these Missoula is a prosperous mercantile point on the western slope, and Billings is the focus of agriculture in the Yellowstone Valley.

Viewed as a whole, Montana is a State of substantial achievement and of splendid promise.

CHAPTER IX

THE AWAKENING OF NEW MEXICO

In the southwestern Territories modern methods of reclamation are asserting their influence in the midst of historic and prehistoric irrigation scenes.

In 1539 Fray Marcos de Nija, the earliest European who trod the soil of New Mexico, travelled for five days through a "valley well watered and in a high state of cultivation, so that three thousand horsemen might have been sustained there." Another sixteenth-century visitor saw corn-fields "watered by a small river which flowed near by, along the banks of which were growing great beds of roses, similar to those of Castile." Many a tourist on the Atlantic and Pacific Railroad has seen the industrious Pueblo Indians at work in their fields about Laguna. The travellers of three hundred and fifty years ago looked upon these same fields, which were irrigated then precisely as now, and as they probably had been for centuries before.

New Mexico is much less favored in its water supply than the northern States of the arid region. Many of its streams are torrential and intermittent in character, carrying water in floods at some seasons and exhibiting dry channels when moisture is most needed. A large portion of the water supply, when the irrigation industry shall be fully developed, will be obtained by storage and from underground sources. This process has already begun, but its operations will be much extended. Scattered all over the territory are the petty ditches of that numerous Mexican and Indian population which lives in serene peace and comfort upon the fruits of its unambitious efforts at tilling the soil.

The important streams are the San Juan in the northwestern corner of the Territory, the Rio Grande, which flows through the central portion from Colorado to Mexico, and the Rio Pecos in the southeast. These streams and their tributaries furnish the basis of the modern irrigation industry of New Mexico.

The northwestern part of the Territory is a picturesque and promising region, fortunate alike in mineral and water resources, in the fertility of its soil, and the charm of its climate. A number of small irrigation systems have been constructed, but storage will be required before the opportunities of the district can be extensively realized. The rivers are the San Juan and its tributaries, the most important of these being the Pine, the Animas, and the La Plata. When these are fully utilized, thousands of small farmers will be able to establish profitable industries, including the culture of finely flavored, delicate fruits. They will find home markets in surrounding mining camps and in supplying feed for sheep and cattle which range upon the public pastures. Although this portion of the Territory is now remote from the main lines of railroad travel, its superior advantages must attract the attention of enterprise and immigrants in the future and make it one of the most prosperous parts of the future State.

New Mexico is distinguished by large land grants dating from the days of Spanish control. They were naturally located along the watercourses, in what appeared to be the most attractive portions of the field open for selection. These enormous grants have materially retarded development, for the reason that their titles were in dispute for many years and their owners generally "land poor."

One of the most important of these properties is now known as the Maxwell Land Grant, and constitutes a principality in the northeastern part of the Territory, encroaching slightly upon Colorado. Large capital has been used in the development of the mineral and agricultural resources of this grant. Its principal streams are the Vermejo and the Cimarron. Both have been utilized extensively in connection with systems of reservoirs and canals which are notable for some of their engineering features. Large areas have been irrigated and are cultivated in various crops.

The waters of the Rio Grande have been diverted at many points along its course. This river rises in Colorado, where a large portion of its supplies are taken out for use in the San Luis Valley. This interferes with New Mexico irrigation during the stage of low water in the summer. When the stream reaches old Mexico it is still further diminished, with the result of making international complications on the south even more vexatious than the interstate troubles which it creates in the north. The solution of both difficulties will be reached through extensive storage arrangements at favorable points in the valley, and some wise administrative plan looking to the equitable distribution of the much-vexed stream. The building of great reservoirs along the lower course of the Rio Grande, just north of El Paso, has long been under consideration and must surely sometime be accomplished, either by private or public enterprise. The soil and climate are exceptionally favorable to the higher forms of the irrigation industry, and its possibilities will be quickly realized when the question of storing and distributing the water shall be settled in the right way. The character of these possibilities may already be dimly discerned in the place where Texas reaches out a slender finger of prosperity below El Paso. Here the Mexicans have made a beautiful agricultural and horticultural district, and live with an enviable degree of comfort and thrift, though their methods are crude and ancient.

Much the most notable irrigation development in New Mexico is that which has been accomplished since 1890 in the Pecos Valley. It is in the southeastern quarter of the Territory, bordering upon the Staked Plains of western Texas. No other locality in the arid region has had the benefit of such daring enterprise and dauntless faith as have been lavished upon this, originally one of the most forbidding and unpromising of western valleys. By sheer force of money it has been translated from a semi-barbarous stock-range, fit only to support lean cattle, to an attractive field for settlement, where thousands of families can make their homes and win a certain living from the soil.

Before irrigation was invoked the region was a social and moral desert as well as a waste of arid land. It was the home of outlaws and the scene of frontier conflict. "Billy the Kid" was the perfect fruit of the old conditions, and it was here that the youthful desperado lived, fought, and died. While his kind are not yet wholly extinct in the neighborhood, cattle and cattlemen have fallen back before the advance of irrigation and railroads, of towns with schools and churches, and of planters and home-builders. Civilization has laid its hand on the Pecos Valley, and a crop of new institutions has begun to sprout from its soil.

The valley is fortunate beyond any other part of the Territory in its water supplies. The Pecos river and its tributaries drain a vast watershed and furnish a perennial flow of large dimensions. This has been reinforced by huge reservoirs, of which one is the second largest irrigation reservoir in the world. Besides these facilities, the valley is blessed with extraordinary springs of flowing water, with artesian basins, and with underground supplies that may be lifted to the surface at comparatively small expense. With splendid disregard for immediate financial returns, these supplies have been utilized and led over the valley by a thousand miles of canals and ditches. The same liberal enterprise built a railroad from the Texas and Pacific line northward for a distance of two hundred miles, and later still farther, to a connection with the Santa Fe system, established towns with modern facilities, and acquired large tracts of irrigable land. These improvements have succeeded one another in rapid succession, and cost, in the aggregate, over five million dollars.

Lying in an altitude varying from three thousand to three thousand five hundred feet, but in the latitude of the extreme south, the Pecos Valley enjoys a good climate. Its winters are short and not severe, though the mercury falls below freezing and thin ice is formed on still water. The summer days are hot, as throughout the Southwest, but the nights are invariably comfortable, owing to the elevation of the country, which is on the high plateau of the Rocky Mountain region. Fields can be cultivated almost continuously and early crops, of vegetables and small fruits are grown. The drawback about the climate is the wind, which sometimes develops into sand-storms of considerable severity. With the extension of the cultivated area and the growth of trees this disadvantage will be minimized.

The valley is yet so new to cultivation that it is impossible to determine the limitation of its products. The chemical qualities of the soil have been the subject of careful study by experts, and gradually the people are learning to what uses different districts are best adapted. In the upper portion of the valley, in what is locally known as the Roswell country, there are several ranches which have been cultivated for many years. These have demonstrated beyond question the capabilities of soil and climate for the production of the finest apples, perfect in form, flavor, and coloring. This fruit is so superior to that which is seen in the eastern market that there can be no question but what it will be a source of profit to the small planters of the region. The lower valley seems more favorable to delicate fruits, such as peaches and apricots. All the grasses, cereals, and vegetables are successful throughout the length of the valley. Sorghum and Egyptian corn are favorite crops, being raised for fodder.

One feature of the country is especially worthy of the attention of settlers. This is the fact that the best of free pastures adjoins the irrigable lands on either hand, so that fine cattle, sheep, and horses could be profitably raised in connection with the small-farming industry. Raising winter fodder on their irrigated acres, the settlers could readily co-operate in the management of their herds during the range season. For the finest beef and mutton there is abundant demand at remunerative prices.

The latest and most promising industry of the Pecos Valley is the sugar-beet culture and manufacture. A series of experiments demonstrated that the conditions of soil and climate were particularly favorable to the growth of beets. It had already been demonstrated in Utah that irrigation permits the most scientific culture of the crop. As this valley has wanted for nothing that money could buy, a sugar factory was erected near Eddy in 1896, and the farmers gladly co-operated by planting considerable areas to beets. The result of the first year's crop put the Pecos Valley at the head of sugar countries in the matter of the quality of its production. The general average of all beets delivered at the factory in carload lots showed seventeen per cent. of sugar in the beet, with an average purity of over eighty-four per cent. This is a higher percentage of actual extraction of pounds of sugar to pounds of beets than has been realized anywhere else in the world. The result points unmistakably to the development of a "sugar belt" in this region, which will be a striking economic advantage if producers do not make the mistake of getting into the fatal groove of the single crop, as has been so largely the case elsewhere with the growers of wheat, cotton, corn, raisins, and oranges.

The chief town of the valley, formerly Eddy, but now called Carlsbad, enjoys a rising popularity as the resort of invalids. Valuable medicinal springs have been discovered, and, in connection with the climate, render the locality quite ideal for those suffering with certain diseases.

The resources of New Mexico, while probably not as rich as those of more northerly States, are yet diversified and largely undeveloped. The annual output of gold and silver is increasing, and seems likely to do so indefinitely. A fine quality of coal is found in large quantities, and is an important item of regular income. The forest area is considerable, and that of woodlands, useful for fuel and fencing, much more extensive. The mining of precious stones, which dates back to the Spanish conquest, is a flourishing and growing industry. The turquoise mines are particularly rich and profitable. Though the amount of production is closely guarded, it is known to be large, while the quality of the stone is quite equal to that of Russia, Persia, and the East Indies.

The social fabric of the Territory is a curious blending of Mexican peons, of town-building Indians, of hardy frontiersmen engaged in mining and stock-raising, and of enterprising new-comers who believe in the future of the country. Of these elements the Mexicans are much the most numerous. They do not differ materially from their kinsmen on the southern side of the Rio Grande. Living in scattered settlements along the mountain streams, they enjoy a comfortable existence in return for their humble labor. The Indian population includes the Pueblos, the Zunis, and the Navajos, and is marvellously interesting, and usually peaceful and industrious. The growth of the white population has been slow, but will increase rapidly with the development of irrigation and the settlement of vexatious problems which have long surrounded the land grants and water appropriations.

New Mexico is one of the American communities whose greatness is of the future. Well endowed with raw materials, it awaits the impulse to be imparted by a new century and the pressure of an outreaching civilization.

CHAPTER X

THE BUDDING CIVILIZATION OF ARIZONA

ARIZONA is a land apart. With the single exception of southeastern California, it differs in many respects from all other sections of western America. This is especially true of all those portions of the Territory which will sustain the densest future population and develop the characteristic institutions of the country.

Speaking of its atmosphere—the product of its peculiar climatic conditions and physical environment—Whitelaw Reid has said: "It seems to have about the same bracing and exhilarating qualities as the air of the Great Sahara Desert in northern Africa, or of the desert about Mount Sinai, in Arabia. It is much drier than in the part of Morocco, Algiers, or Tunis usually visited, and drier than any part of the valley of the Nile north of the First Cataract. It seems to me about the same in quality as the air on the Nile between Assouan and Wady-Halfa, but somewhat cooler."

This description of the Arizona air, which is remarkably happy, may be accepted as a key to the true character of the country. It is a semi-tropical desert, like the region about the southern and eastern shores of the Mediterranean, where civilization was born of the ancient art of irrigation. This is said with reference to the southern and western parts of the Territory, which are drained by the Gila and Colorado rivers. Northern Arizona is distinguished by its mines, its notable forests, and the indescribable grandeurs of the famous Colorado canyon. The southeastern quarter, which adjoins New Mexico, is a great pasture, bearing scanty or generous crops of nutritious wild grasses, according as the season is dry or wet.

The Salt River Valley is the glory of Arizona. Approaching it from either of the transcontinental railways the traveller sees naught but the gray desert soil, marked by the gnarled branches of the mesquite and the slender pillar of the cactus. Even the mountain-sides appear to be devoid of verdure and tanned to a dark brown by the sunshine of centuries. But suddenly all the beauties of the Garden of Eden burst upon the astonished gaze of the visitor. Wherever the waters of irrigation have moistened the desert, and man has planted the seed of grass, flower, or tree, the most luxuriant vegetation has sprung from the soil to revolutionize the appearance of the country.

The capital city of Phœnix—risen from the ashes of a forgotten people—is the pulsating heart of the new life of Arizona. Here are modern business blocks, handsome public buildings, busy stores, a promising university, and hundreds of beautiful homes resting under the shade of palm, magnolia, and pepper-trees. Tucson and Yuma, though thriving and populous, are Mexican in architecture and habits. Prescott, Flagstaff, and numerous other communities in the higher altitude are the products of the mining industry. But Phœnix is distinctly modern, and almost wholly the offspring of irrigation.

The Salt river is the largest tributary of the Gila. It has been the scene of active irrigation enterprise since 1867, but particularly during the last ten years. It is an interesting fact that the works first built followed the lines of prehistoric canals. Reclamation has been extended to both sides of the valley, but cultivation is oldest and much the most extensive on the northern side, around Phœnix. Here a number of canals were consolidated into a single system, the managers of which have made improvements and extensions year by year, and gradually evolved a work of great perfection and completeness.

On the south side of the river a similar consolidation has occurred. Here settlement was begun in 1878 by Mormon colonists, who founded the charming place now known as Mesa City. There are several independent irrigation systems upon this side of the valley, the most important of which is the Highland Canal, which runs along a high level and waters thirty thousand acres of valuable land. Water-power is obtained in connection with the irrigation canals on both sides of the valley, and electrical power is applied both to lighting and transportation.

Tributaries of the Salt river flowing from the mountains on the north, notably the Rio Verde and the Agua Fria, will furnish water for new and large enterprises. Storage is the feature of these works, and reservoirs have been constructed in a number of instances. Both on the upper and lower courses of the Gila river important irrigation canals are planned, and a number have been completed. Much difficulty has been experienced in building enduring dams along this erratic stream. Sudden and powerful floods sweep down the valley during the season of melting snows, and it is the nicest engineering problem to make constructions which will stand the test.

Alike in the Gila and Salt river valleys the agricultural districts suffer for lack of water during the dry summer season, when water is most needed. The only possible solution of the problem will be the construction of large reservoir systems at the mountain sources of the streams. Nature has provided phenomenal facilities for such storage works, but the opportunity has not been utilized, owing to the large cost involved and to the fact that no single company could afford to make improvements which would be equally beneficial to all who draw supplies from these streams. The work is of such importance as to justify an expenditure of public money, especially as large areas of public lands would be made habitable in consequence.

The enormous water supply which now flows uselessly to the Gulf of California through the channel of the Colorado river must be extensively availed of in time. Mormon settlers have reclaimed small valleys on the Little Colorado in the northern part of the Territory, and extensive plans, looking to the use of the larger river, have been made. Thus far the most notable development in this region is at Yuma, where water is elevated to the heights above the town by pumping machinery. Enough has been done in this locality to demonstrate the value of the soil and climate for the production of the finest fruits, including table grapes, which are laid down in San Francisco before the California product is in the market, and the best varieties of oranges and lemons.

The climate of Arizona varies widely with different altitudes. In those portions of the Territory most favorable to settlement, including the Salt river and Gila valleys, the summer weather is as trying as the winter is charming. People get used to it, but it is rather a distressing process. While the summer heat is by no means unhealthful or a fatal obstacle to settlement, it is unquestionably a serious drawback.

In the Salt River Valley all classes of fruits have been tested sufficiently to furnish reliable conclusions as to the range of production. The climate is semi-tropical and the products similar to those of the lowland districts of California and the region about the Mediterranean.

The government reports show that the highest and lowest temperatures at Phœnix averaged for eight years as follows: November, 78½ and 42; December, 73⅛ and 36⅛; January, 65⅛ and 32; February, 71⅛ and 35⅛; March, 81½ and 41; April, 86½ and 46. Orange-trees successfully withstand a temperature of 28° above zero. Hence, it is no surprise to find them growing successfully in the Salt River Valley, at Yuma, and elsewhere in central and southern Arizona. The determination of the exact limits of the citrus belt is a nice problem in any country. A certain elevation above the river, and a certain amount of protection from the wind and from the rising sun are essential. The most favored spots are usually those which are screened from the first rays of the morning sun by a background of eastern hills. This condition permits a gradual warming of the atmosphere, so that if there has been a slight frost during the night no serious damage is done to fruit or tree.

Wherever oranges can be grown at all, the area suitable for their production is likely to be exaggerated by those who sell climate by the acre. While the orange districts of Arizona are not as yet perfectly defined, there is no longer any question of the production of citrus fruit, nor as to its quality and the early date at which it ripens. It anticipates the southern California crop in the market, though not the crop of northern California, which is several weeks ahead of the southern product.

Wherever the orange can be cultivated, the less tender semi-tropical fruits—figs, olives, almonds, pomegranates—may be certainly counted upon to grow even more surely and over a large area. The largest fig orchard in the United States, and one of the largest in the world, is located in the Salt River Valley. This industry has not yet proven profitable, either in Arizona or California, speaking broadly, for the reason that our people have not entirely mastered the art of curing and packing. The other products which have been mentioned are thoroughly successful. So also are the finest qualities of raisin, wine, and table grapes, and of the deciduous fruits, such as peaches, apricots, prunes, pears, and apples. All vegetables and small fruits yield largely. With better railroad facilities and rates, Arizona would be a strong competitor of Florida and the West Indies in the shipment of early vegetables to eastern and northern markets.

The major proportion of the irrigated land is tilled in large farms devoted to grasses and cereals. Alfalfa is the favorite fodder crop, and the valleys are becoming great feeding grounds for cattle, horses, hogs, and sheep. While this phase of the agricultural industry has been prosperous, it by no means represents the better possibilities of Arizona. The conditions of climate, of soil, and of irrigation are all extremely favorable to the intensive cultivation of small areas.

Ten acres in southern Arizona constitute a good-sized farm. Variously planted to vegetables, small fruits, orchard, and grass, and cultivated by the most scientific methods, such a farm should yield a far better living, and make a surer provision for old age, than one hundred acres in the eastern and middle States, which depend upon rainfall, and consequently produce the cheaper class of crops.

Lacking nothing in general advantages, Arizona is deficient in the higher forms of industrial and social development, which have made portions of California the paradise of the common people, and which are beginning to shape institutions throughout the arid region. The explanation is that the Territory is just passing from the frontier stage into the first period of real civilization. The conquest of the desert has been well begun, and the broad foundation of an intense economic life substantially laid. It remains for the future to build the superstructure.

The people of Arizona have been drawn from many different sources, and from more than one race, but the pushing American element is distinctly dominant. While there are many of the lower class of Mexicans, they are much less numerous here than in New Mexico, and much less widely diffused over the Territory. The Indians, who are seen everywhere, even in the best settled districts, are now mostly inoffensive, and even industrious in many cases. Like the Mexican peons, they are useful laborers in the simpler agricultural tasks. The warlike tribes are closely confined to their reservations, and no longer constitute a menace to settlement.

Arizona is developing a spirit of intense local pride as marked as that of Colorado. This is the best guaranty of its ultimate greatness. It is a good recommendation for any country when those who know it best exhibit the most confidence in its future.

Part Fourth

THE ARMY OF THE HALF-EMPLOYED

"Your fate I believe to be certain, though it is deferred by a physical cause. As long as you have a boundless extent of fertile and unoccupied land, your laboring population will be far more at ease than the laboring population of the Old World. But the time will come when New England will be as thickly populated as the Old World. Wages will be as low and will fluctuate as much with you as with us. You will have your Birminghams and Manchesters, and in these Birminghams and Manchesters hundreds of thousands of artisans will assuredly be sometime out of work. Then your institutions will fairly be brought to the test."—Lord Macaulay *to an American friend.*

CHAPTER I

THE SURPLUS PEOPLE

The settlement of the United States has been largely a story of foreign immigration. While the movement of population from the Old World to the New has not ceased, the settlement of new areas during the coming century will be in marked degree a movement of domestic immigration. Foreign population no longer settles extensively upon the agricultural lands of the West. It remains in the cities of the seaboard, making New York, Philadelphia, and San Francisco cosmopolitan communities, and submerging the Puritan traditions of Boston under a wave of Celtic dominance. It fills the coal-mining districts of Pennsylvania, Ohio, and Illinois with Hungarian and Bohemian laborers. It replaces the native artisans of New England manufacturing towns with Canadians, Italians, and Armenians. It swells the population of the Lake Cities, such as Buffalo, Cleveland, Detroit, Chicago, and Milwaukee. It is thus that the strong current of foreign immigration, which had a large part in making the Middle West and gave a powerful impulse to the growth of interior cities, expends itself in these days.

There is a surplus population chiefly in cities and towns east of the Mississippi river. While much has been said of the Army of the Unemployed, the fluctuating numbers of the utterly idle is no true measure of our surplus population. There is an infinitely larger element of half-employed and semi-prosperous, and it is from the ranks of these that the colonizing hosts of the future will mostly be drawn. The very poor constitute a small element in all communities, and however urgent their claim upon charity, their situation is of far less importance to the peace and stability of society than the conditions of life and labor for the masses who do the world's work. The future civilization is to be discovered at neither of the social poles—that of the very rich or that of the very poor—but in the continental expanse of human life that lies between these two extremes.

The surplus population who will occupy and develop the waste-places during the coming century are the men and women of overcrowded eastern industries, stores, and professions, and, in smaller measure, of unprofitable eastern farms. To a very large extent they are of the best native stock. Their presence in the ranks of the half-employed and semi-prosperous is due to several leading causes—to the wonderful invention of labor-saving machinery, which does the work of human hands without charge for food or clothes; to the competition of foreign immigrants content with less wages and a lower standard of living; to the concentration of capital and the conduct of all lines of business upon so large a scale that small men cannot survive in the race with them; to the cessation of the rapid settlement of new areas in the West, which made constant demands upon the products of eastern spindles, looms, and lathes; to the natural movement of the greater manufacturing lines from old industrial centres nearer to raw material and to consumers.

Some of these causes are so well known as to make it unprofitable to do more than barely suggest them, but others have not been generally studied in the light of causes of future domestic emigration. For instance, it is often claimed that invention and labor-saving machinery create a demand for as many new workmen as they displace. Grant that this is so, and we do not satisfactorily answer the question as to what is to become of the men and women who lose their means of livelihood. Some of them are readily absorbed into the new industries, but by no means all. One hundred printers may be suddenly thrown out of work in a given community by the advent of type-setting machines. They cannot all turn immediately to employment in a bicycle or automobile factory. The displaced printers may be in Kansas City and the new factories in Baltimore. Besides, it is the young mechanic, with no trade and habits to unlearn, who is in most demand for the new industry.

These conditions make life constantly harder for those best equipped with experience and most likely to be possessed of a little capital in the shape of a home or savings-bank deposit—that is, the middle-aged. So it happens that the ingenious machine which may lighten the cost of an article of common necessity, and by so cheapening production even cause the enlargement of a factory and enhance the prosperity of a given local community, almost inevitably creates recruits for the Army of the Half-employed. This process has been going on rapidly during the past generation, and made thousands of people discontented and apprehensive—hence, ripe for some new movement of colonization like those which, during the past two centuries, peopled different sections of the United States. For it is ever the intelligent discontented who make colonies and plant institutions.

As with labor-saving machinery, so with the concentration of capital, which is the phenomenal economic movement of the hour. Fifty factories under one control; a few great and attractive stores dealing in all lines of merchandise; ten railroad systems consolidated into one, and that one stretching its arms from ocean to ocean—all this may, and probably does, make for cheaper goods and better service, for more scientific business methods, and for the progress of civilization in the end. But the intermediate process of adjustment to new conditions is a hardship to multitudes of men and women in many ways. It lessens the demands for labor in numerous local instances, and the result is a large aggregate of discontent. What is infinitely more important, it makes it increasingly difficult for men to lead independent lives and make independent livings.

The startling and disturbing aspect of our new economic development is the downfall of the small man. Modern production demands the large factory and expensive machinery; hence, great capital. Modern trade, especially in the principal cities, requires an immense department-store, with a host of poorly paid employés; hence, great capital. Modern transportation requires railroad systems so extended and diffused as to give absolute control of a certain territory; hence, great capital.

When production was conducted upon a small scale men of small means found no difficulty in becoming manufacturers. The enterprising shoemaker—to illustrate—could build a little shop in his yard, purchase a cheap kit of tools, and manufacture in a small way. If he had taste, thrift, and industry, he prospered, and perhaps built up a large business. The man who did that thirty years ago could not hope to do it to-day, simply because the conditions are such as to prevent him from getting his first foothold. As a petty manufacturer he could not possibly compete with the great manufacturers employing large capital and costly machinery. His only recourse is to become an employé of a richer man or corporation. He is denied even the chance to bring himself to the test of the rule of the survival of the fittest among employers and manufacturers, because he cannot be born into that exclusive family. The unborn have no opportunity of survival. As with the shoe industry, so with most other common lines of production.

The decline of the small tradesmen in great cities is a pitiful, even if familiar, spectacle. Sixth Avenue in New York furnishes a luminous instance. This thoroughfare used to be a paradise of small merchants, dealing in their several lines of goods, and winning a fair average prosperity in the midst of lively competition. To-day a few great stores stand like monuments in that graveyard of small merchants. Competition between the old conditions and the new is impossible.

Even the professions are not exempt from the influences which have wrought such changes in the lives of small capitalists and skilled workmen. Self-respecting young men and women do not willingly and deliberately set out upon lives which deny them independence of thought and action, and no opportunity to rise except as salaried employés, submissively doing the will of other men. Multitudes of them avail themselves of the chances of liberal education which benevolence has so plentifully scattered over the land. They prepare to win what they conceive to be the easy rewards of professional careers as lawyers, physicians, teachers, musicians, and so on. While there is yet plenty of room at the top, it is much easier to find the way to the middle or the bottom of the list. The result is a surplus of professional people in every walk, especially in cities and towns of our older States. Religious journals complain of an over-production even of preachers, ministers, and missionaries.

Of the fact of surplus people available for the conquest of Undeveloped America there is, therefore, no question whatever. Never was there an army better equipped or more eager for its task. In character it is almost cosmopolitan, but with the strongest Anglo-Saxon predominance. It has been educated to a standard not dreamed of by any colonizing host of the past, thanks to a system of common and high schools of which the latter approximate the university education of fifty years ago. Collectively, it is by no means destitute of pecuniary resources, for it represents a vast aggregate of savings and property. It is animated by the moving cause of all successful and epoch-making emigrations, the desire to better the conditions of living for its individual members.

So conditioned and equipped, these children of a race of world-conquerors and republic-builders—these surplus men and women of America—stand with their faces to the morning of the new century, magnificently fit to do the work of their day and generation.

CHAPTER II

WHY THE PEOPLE DO NOT GO TO THE LAND

FLANKED upon one side by economic conditions which deny them prosperity, and upon the other by great natural resources which only await human genius and energy, why do not the surplus people go to the surplus land?

First and chiefly, because they lack the necessary capital. To move across the continent and make a new home in a new country requires a working fund of one thousand or two thousand dollars—and the latter is much the safer sum. It may almost be said that those who need to move cannot do so, while those who can move do not need to. This is not literally true, because there are doubtless thousands of families commanding a capital insufficient to enable them to engage in trade or manufacture under modern conditions, and likewise insufficient to yield support when invested, yet quite enough to establish them comfortably as settlers on irrigated land, provided their capital be supplemented by the wise use of their own labor. But there are thousands—perhaps millions—of families who have every qualification required for successful settlers except money. Their ability to perform productive labor is, indeed, capital of a most essential kind, but without a certain amount of cash it is capital which is unavailable.

Popular ignorance of the West is another potent cause which keeps the willing men away from the waiting land. Undeveloped America is a vague and mysterious quantity to the masses of our people. It curiously happens that they are better informed about Africa and the regions of the North Pole. So much as is known about these latter localities has been published in attractive form and generally read by intelligent people. Then, too, somewhat upon the principle that every boy finds another's sister more interesting than his own, foreign lands have a claim upon the attention of our people superior to that of our own. It is doubtful if the senior class at Harvard or Yale could pass a good examination as to the history and resources of such mighty States as Montana, Idaho, or Nevada, yet there would be little risk in asking them for a good account of the lives and surroundings of Paul Kruger and Cecil Rhodes, or for the details of Nansen's voyage to the Pole. If this be true of the liberally educated, who are surrounded by all facilities for studying the undeveloped parts of their own country, no apology need be made for those who enjoy no such opportunities.

But if there is lack of information about the West, there is no lack of misinformation. Vast quantities of advertising matter have been sent broadcast by railroads, land companies, and commercial organizations. This class of reading matter has always been prepared in the interest of certain localities, and comes under the head of "boom literature." While some of it has been of high character of its kind, the general effect of such advertising has been disappointing both to those who issued and to those who read it.

What a new country needs is gradual growth and sober development of its resources on sound economic lines. What a settler wants is a calm and candid statement of the opportunities existing in the locality towards which he is looking, and a perfectly truthful account of the experience of the people who preceded him there. It is as important for him to know the drawbacks as the advantages; to learn of the failures, and the reasons thereof, as of the successes. In the advertising matter sent out by interested individuals, companies, and communities, intending home-seekers get only partial and misleading information as a rule. They learn only of the advantages of soil, climate, and location. The examples held up for their consideration are exceptional instances of prosperity rather than average results. Of the failures and disappointments nothing whatever is reported. Thus it happens that the masses of our people who would gladly make homes in the undeveloped parts of the country suffer about equally from lack of good information and surfeit of misinformation.

There is another reason which accounts for the backwardness of western settlement, depriving even the class who have the financial ability to move of the necessary courage and confidence. This is the fact that great numbers of people who went West in the past incurred failure or disappointment. This is an influence which may be observed in every eastern State. There is scarcely a community which has not sent at least a few settlers west who reported later that they were sorry they left home. It is true that millions of eastern people have settled between the Mississippi river and the Pacific Ocean, and prospered. On the other hand, it is true that other millions have remained in the East and failed to prosper. Nevertheless, as failure in this line is more widely advertised than success, the disappointments encountered by families and individuals drawn from widely scattered eastern communities constitute a most serious obstacle in colonization work.

What are the causes of failure on the part of eastern settlers who started out with high hopes, and frequently with abundant capital, to make new homes in the West? There are a variety of reasons, but they may be broadly divided under two heads. There have been numerous attempts to realize impracticable dreams of social and economic reforms. These were usually undertaken by excellent people who sincerely desired to make the world better. California has been a favorite field for such efforts. Madame Helena Modjeska and a little party of her talented compatriots tried to found a social and artistic paradise in the vicinity of Los Angeles many years ago. They failed because they had no comprehension of the prosaic problems of land and water, and were unable to do the hard work which success required. There was a dress-reform colony which aimed to simplify feminine attire, and provided that when its women desired new dresses they should submit the matter to a committee and be governed by its action. When the committee reported adversely to any woman's hopes, her male friends generally took her part, and it was not long before the colony was disbanded. There have been numerous attempts to realize very advanced ideals of Socialism. Almost without exception these were undertaken with inadequate capital, and failed before they could reach the point of possible success, however sound the theory upon which they worked. There is reason to fear that dissension and lack of strong leadership might have defeated them even if there had been sufficient working capital.

The aggregate of these unsuccessful dream colonies is small, but their influence upon settlement is in inverse ratio to their numbers. Such great examples of successful colonization as we have seen in Colorado, Utah, and southern California have commanded far less attention than the abortive efforts of little handfuls of people who, at different times and places, have tried to found institutions which were either intrinsically impracticable or ahead of their day. Co-operative associations in certain parts of the West, doing an annual business of millions of dollars, and co-operative industries and stores in Great Britain and other European countries which have achieved a degree of success even more unquestionable, are less known by popular report and apparently less influential in the economic life of our times than many a little colony of enthusiasts that ended in failure. Brook Farm in Massachusetts is a striking instance. Volumes have been written upon it, and each successive generation of New-Englanders will hear of it and smile, as their fathers and grandfathers did before them.

It would be wholly unfair to say that the disappointment of settlers is limited to the very few who belonged to this class of idealistic colonies. Large numbers of people have gone out alone, settled in western cities or towns, encountered failure or disappointment, and either returned to their original homes, or advised their friends to remain there.

Those who settled in cities may be disposed of in a sentence. Attracted by temporary booms, they found that western cities are as overcrowded as those in the East. In one respect the condition of business and employment is frequently more discouraging in the West. Many people in poor health are sent out by their physicians, and, since they must live in the new country to save their lives, are willing to work for any wages they can get. This introduces an element of competition in the ranks of employment which has a blighting effect upon wages. Very few western cities are in need of more people to reinforce either their commercial or professional life. There is plenty of room for those who are willing to develop and use the vast resources of natural wealth—for those who are willing to till the soil, fell the forest, and open the mine. There is no demand for more young men to measure tape or more young women to run type-writers. What is wanted is millions of sturdy men and stout-hearted women to conquer the waste places and to work for themselves.

A large proportion of those who went west in recent years engaged in the fruit industry. This was painted as a sure and easy road to wealth and an ideal occupation in the midst of ideal surroundings. The hard work and constant vigilance which success in this industry demands were seldom mentioned in the glowing advertisements which attracted these settlers. Nothing was said of the economic folly of the farmer who buys all he eats and sells all he produces. As a natural consequence, people who went west, particularly to California, paid high prices for their land, waited years for trees to come into bearing, and discovered that there could be no profits without skill and hard work. They found that there are such evils as over-production, high freight charges, and the extortions of the commission system. Tens of thousands of people failed in their efforts to make homes in the semi-arid regions of the Dakotas, Nebraska, Kansas, and Texas because of having neither rain nor irrigation facilities to moisten their fields. The isolation of farm-life, and the lack of the enjoyments and refinements available even to the poor in the older States, have been fruitful causes of heart-sickness.

The chief reasons, then, why the surplus people do not go to the surplus lands are that they have not the capital to do so; that they do not know where to go; that they do not know how to organize their industry in order to prosper; that they fear the lack of good society and the refinement which this should furnish to them and their children. The plan of domestic colonization which shall be of broad and enduring effect, and so give to the nation the incalculable gains which may be won from the development and use of its waste resources, must solve all these problems. Nothing short of this will meet the demand and open the gates of the West to the vast multitude who would gladly enter at this wide portal if they could believe that economic independence lay beyond.

CHAPTER III

COLONIZATION WITH CO-OPERATIVE CAPITAL

THE problem of making homes in the West for the masses is the problem of bringing together surplus land, surplus labor, and surplus capital. The first two factors have been discussed in previous chapters. It remains to consider the question of surplus capital and of its utilization in connection with the conquest of unused natural resources.

Of the fact of surplus capital there is, of course, no more question than of the fact of surplus land or the fact of surplus labor. Just as there are great areas of unemployed land and great numbers of half-employed people, so there are vast amounts of idle and unproductive, or of half-employed, capital all over the United States and in foreign countries. The difficulty is that those who own the land do not possess the necessary labor, and that those who have the labor do not possess the necessary capital. Each of these factors is impotent without both of the others. To bring them together upon a basis of mutual security and profit is to solve social and economic questions of world-wide extent and importance.

The evils of over-population, and the consequent fierce struggle for existence, are not peculiar to the United

States, one of the newest of nations. They are common to nearly all other countries. Nor is this the only continent which offers an inviting field for expansion and development. The same problems and the same opportunities, capable of solution and of use by the same methods, exist everywhere. If it be possible to effect colonization by means of co-operative capital in western America, then it is equally possible to do the same in Africa, Australia, and the Orient. If this method will open a door of escape for the swarming populations of Boston, New York, and Chicago, it will accomplish the same result for the over-crowded people of London, Paris, and Rome.

Looking at the matter in the light of its world-wide possibilities, we see at once that if capital is to be employed in the work of colonization apart from its owners, as is done in railroads and other industrial enterprises, it must be employed upon the soundest business principles. These principles must be applicable to a great variety of conditions—to different kinds of people, of soil, of climate, of markets, of surrounding resources. First of all, there must be security. Second, there must be earning capacity at least equal to the demands of current interest on safe investments. Any plan that falls short of this will not meet the exigency.

Our settler has only his labor to start with. He must buy land of one man and borrow capital of another. Then he must pay for both with the proceeds arising from the wise use of the land he has bought and the money he has borrowed, plus the capacity to labor, which was his only original capital. The element of charity cannot enter into the matter at all. Philanthropy in its true sense—concern for the welfare of mankind—may furnish an impulse to such a work, as it has done for many another business enterprise, such as life insurance, building and loan associations, and workingmen's hotels. But these enterprises rest on sound and enduring business principles, or they could not long exist or widely extend. We must find equally sound and enduring business principles upon which to rest the idea of colonization by means of co-operative capital, or it can contribute nothing of value to the progress of civilization.

In the seventeen western States and Territories there are to-day eight million acres of fertile land lying under completed irrigation systems. There are millions more lying under half-finished works. They represent an unproductive investment, counting interest charges, of two hundred to three hundred million dollars. The chief reasons for the fact that they are not utilized by those who need them have been stated in the foregoing chapter. Additional reasons are the unsatisfactory condition of water-rights in numerous instances, and the popular prejudice against arid lands. These lands have every element of potential value. They have the peculiar fertility arising from aridity, as described upon scientific authority in an early chapter of this book. They are fortunate alike in climate and in the surrounding resources of mine, forest, and grazing lands. They represent the highest productive capacity upon the smallest area, and are thus capable of sustaining the densest agricultural population. All these conditions make these lands extremely valuable, but only in case the capital and labor be supplied to awaken their sleeping potentialities.

Here is a field which stands ready and waiting. The costly work of preparation was done during a speculative era, when it was believed that it was only necessary to build reservoirs and canals in order to induce a stampede of settlers to the newly reclaimed regions comparable to that which peopled a State in Oklahoma almost in a night. But those who reckoned thus did not understand certain fundamental differences between the humid and arid regions, and how these differences affected not merely the process of colonization, but the habits, customs, and institutions of the people engaged in the work. As the irrigation speculation of the early nineties turned out, it seems almost as if a special Providence had provided a field for co-operative colonization, and then permitted it to lie fallow until men should see the light.

There are plenty of surplus people who would gladly occupy these surplus lands. The missing link is the necessary capital. Supposing this be supplied and the willing people sent forth upon their task, what are the elements of security and the sources of profit for the capital which must be employed?

First, there is security in the land and water supply. This is of the most permanent and stable character. It cannot burn up, nor blow away, nor be stolen, nor does it deteriorate with use. It grows more valuable with the passing years, with development, with the increasing pressure of population. The improvements made upon it are likewise fixed in character. Every dollar of money and every hour of labor expended upon the land remain there, permanent and inalienable additions to the value of the property.

There is a second element of security not inferior to the land itself. It is the element of human labor. This is the soul of the security, as land and water are its physical body. Labor is the creative force which alone gives value to any form of security. Behind government and municipal bonds is the labor of bodies politic. Behind railroad and other industrial stocks and bonds is the labor of an army of employés. Behind co-operative colonization bonds would be the labor of earnest men and women, selected for their intelligence, industry, and ambition—of men and women working under competent leadership to make homes and achieve independence for themselves and their children. There can be no better security than good irrigated land occupied by industrious people under these conditions.

The foregoing statements apply with equal force to the question of earning capacity. There is no failure of crops upon irrigated lands when cultivated. There never will or can be such failure until water forgets to run down hill and the earth forgets to yield her increase. The productive capacity of irrigated lands, under the conditions of soil and climate obtaining in the arid regions, is superior to that of any other lands. Under the industrial plan outlined in the following chapter it is impossible for the colonists to fail of a living. Under that plan it is likewise impossible for them to fail of a surplus above a living, sufficient to earn interest and make regular contributions to the sinking fund upon the basis of such a capitalization as is ample for the undertaking.

We have here, then, in the irrigated but idle valleys of the West, all the elements of a first-class security, including the capacity to earn profits and pay off the principal.

We have, first, a great investment which has prepared the land for occupancy; then, fertile land and reliable water supply; intelligent and interested labor to do the work; the improvements made by the use of the labor and capital. The very important question of wise and honest administration of the enterprise is dealt with in a subsequent chapter.

Having considered the general principles of investment which enter into the problem, we are now ready to discuss its details. The lands and works required for the undertaking should be purchased on the shrewdest business terms. They can generally be had for at most the amount of the original investment, and often for a good deal less. In many cases a large part of the investment has been eliminated by foreclosure, and it is only necessary to reimburse the bondholders, or those who bought at forced sale. There is no occasion, therefore, for the settlers to pay a sum which would represent a profit upon the lands and works. If they pay six per cent. upon the capital borrowed to acquire and develop the property on the favorable terms now possible, they can readily command all the capital needed for future operations. The price of lands would vary in different parts of the West, ranging from five to twenty dollars per acre. This would include the appurtenant irrigation systems and perpetual water-rights. With labor and capital to develop them under wise plans and good leadership, these lands and improvements would soon have a value, on the basis of earning capacity, of fifty to one hundred dollars per acre, and in some instances much more.

The cost of transporting settlers from their present to their new homes should be borne by themselves or friends.

It would not be a legitimate use of the investment fund. What is paid for land, labor, and resulting improvements remains as a permanent part of the security and facilities of production. But every dollar paid for moving people and household goods is lost and can add nothing to security or income. Labor supplies should be drawn from the nearest point where available, or if brought from a distance should bear their own transportation charges.

The first expenditure of the investment fund, after paying for the land, would necessarily be for shelter; the next for implements and live stock, seed, and fruit-trees. After that the entire fund would be available for labor and its maintenance. This labor would be used to clear and plant the land and bring it to the highest possible stage of production. Settlers in the West build comfortable houses for two or three hundred dollars, and even less. Many a prosperous colonist points to a shanty in the shadow of a comfortable residence which is full of interest to him as a monument to his humble start. He and his family built it with their own hands, perhaps paying no more than fifty dollars for the materials. It is amazing how comfortable a family can be in the poorest shelter when they think they see property and financial independence a few years ahead of them. It is not profitable to go into all the items of cost in detail, since conditions vary with different localities, but it may be said that one thousand dollars per family would be the minimum and two thousand dollars per family the maximum sum to be provided where settlers drew their entire capital from the investment fund. Farms should not be smaller than ten acres, nor larger than forty, and twenty acres would be a reasonable average.

It is highly necessary to set apart a certain proportion of the investment fund—say ten per cent.—to be used by the colony for common purposes. They should own and improve the town-site and have the profits arising therefrom. We have seen the benefits of this plan in the history of Horace Greeley's famous Colorado colony. They should own various small industries, the possession of which represents the difference between large profits and small ones for their labor and crops; the difference between selling finished product and selling raw material; the difference between commercial independence and dependence. They should own or control range facilities, that they may engage in the remunerative cattle and sheep industries. In many cases they will find it profitable to cut and manufacture their own lumber. No single thing can contribute so much to their independence and prosperity, and, consequently, to their peace and happiness, as a fund available for those things which are beyond the reach of the individual, yet highly essential to the individual as a part of the community. The management of this common fund and the various properties to be created with it is dwelt upon in the next chapter.

Returning now to the financial proposition, we see that the settler who borrows one thousand dollars to improve a twenty-acre farm incurs an obligation of fifty dollars per acre. A part of this he has paid for land, and another part contributed to the colony fund for the general purposes. The balance is an improvement fund, available to bring his farm to a productive state. If he is to pay back his borrowed capital in ten years, and pay six per cent. interest in the mean time, he must have three dollars per acre each year for interest and five dollars per acre for the sinking fund. In other words, he must earn and lay aside the net sum of eight dollars per acre over and above the cost of his living. No one familiar with the productive capacity of irrigated land, and with the markets which fortunately surround nearly every fertile valley in the arid region, will doubt that this is easily possible. But by what methods can this result be best assured? Is the average settler drawn from the urban life of the East able to expend his borrowed capital and direct his untrained energies surely to this end? Will the investor be willing to trust him to do so? Both questions may be emphatically answered in the negative. How, then, is the thing to be done?

The labor is handled as a unit. While each man is working *for* himself he does not work *by* himself. He works in co-operation with his fellows, under the direction of expert superintendence, at least until all the farms have been brought successfully through the preliminary stage to a paying condition, and until the demands of intensive cultivation make it more profitable for each man to devote his time largely to his own place. This is only reducing to a science the method of "swapping work" which already prevails in new countries—that is, where there are a number of settlers, they help each other in clearing lands, building houses, and, later, in planting and harvesting crops. They find it profitable to do this, especially in the early years of their settlement, because there are so many things to be done about a farm which are beyond the strength of a single individual. By helping each other the work of all is done expeditiously, without cash outlay for hired hands. It is the old story of more economical production and less waste by doing things on a large scale instead of a small one.

The advantages which settlers obtain by the crude method of "swapping work" among themselves would be vastly greater in the case of co-operative colonists working with sufficient capital under trained leadership. In clearing, planting, and reaping they would be able to use machinery too expensive for one small farm, but very cheap indeed when the expense is divided among many small farms. The quality of their work and the *esprit de corps* would be much higher. It would represent the difference between a regiment and a mob. Raw recruits would soon become as effective as the best-trained farmers under this teaching and discipline. But the chief advantage would be the financial one. This would result from the prevention of waste of money, time, and energies which characterizes individual settlement, especially where the conditions of industry are so new to most of our race and nationality as they are in the land of irrigation. It would result also from the fact that those who had furnished capital for the work would be able, through their representatives, to keep their hands on the purse-strings, and so control and direct the expenditure of their money to the accomplishment of their ends—the making of productive homes which will enable the borrowers to pay interest regularly and principal at maturity.

If the labor is to be handled as a unit and the settlers to work under guidance, by what method is the improvement fund to be made available for them, and how are the investors to be assured of the proper collection of their share of the proceeds arising from the joint use of the land, labor, and capital?

The improvement fund is paid out regularly each week or month in the form of wages. Out of these wages the settler pays a regular sum each month, equivalent, at the end of the year, to six per cent. interest on the amount he has borrowed. After the first year he would be required to make an additional monthly payment into the sinking fund, equal, at the end of the year, to ten per cent. of his borrowed capital. But after the first year the settler has something besides his wages on which to depend for his payments.

All the profits of the work above fixed charges are credited to the settlers in proportion to their wages, which are supposed to fairly measure the value of their work. The fixed charges are cost of labor and materials and six per cent. interest on the capital employed. The profits above these charges should be large and increase with each year, especially as trees come in bearing. It is for the settler's interest to have these profits begin as soon and grow as large as possible, since they are all applied to the reduction of his debt. The accumulations of the sinking fund are applied by trustees to good investments, in connection with the colony, such as cattle or sheep, the erection of needed industries, or the provision of facilities for the sale and distribution of products. If circumstances permitted, the entire borrowed capital could be paid off before the time of its maturity, or the money retained for profitable use in other ways, as seemed best to those charged with the care of the investment.

Wages vary with different occupations, but common labor would receive thirty to forty dollars per month, out of which the family living would be paid. An additional charge would be made for life insurance, to protect both the loan and the settler's family in case of death. It is not expected that the wages will be such as to provide for anything except the bare necessities of life. The co-operative settler must be economical and thrifty and work hard. It is not a case for the eight-hour day. Men who are working for themselves rather than for other men can afford to work long hours, as has been done by most of those who have made themselves independent. An incidental advantage of handling the labor as a unit under good management is that it can be employed effectively throughout the year in developing the colony and its surrounding resources, which is not generally the case with individual settlers.

There are two other striking advantages which result from preserving the solidarity of both the labor and the capital under this plan. All the supplies consumed by the community, from potatoes to mowing-machines, can be purchased at wholesale and at a great saving of cost. Then the products of the land can be sold under a single management and in large quantities. The result is a great saving in the cost of living and a better net result in selling. Both of these things enhance the settler's prosperity and enable him to repay his borrowed capital the sooner. It is not expected that all settlers will pay out in the same time. Some will do so years earlier than others, because more economical and ambitious. In fixing the term of the loan at ten years, the maximum period is taken.

In estimating the settler's ability to repay borrowed capital, one thousand dollars is taken as the unit of the loan, and twenty acres as the unit of the farm.

When the loan is twice the amount the farm will be double the size. In the former case the annual interest charge is sixty dollars, and the contribution to sinking fund one hundred dollars, or a total of one hundred and sixty dollars per year. To meet these charges, as has already been pointed out, profits and savings from wages must be equal to eight dollars per acre. It is the problem of the management to make the labor produce the amount of its moderate wage and something in excess. Careful estimates lead to the conclusion that five dollars per month, or sixty dollars per year, is all that need be deducted from the wages of the settler who borrows one thousand dollars on twenty acres, and that ten dollars per month would be deducted from the wages of the settler who borrowed two thousand dollars on forty acres. It seems to be perfectly safe to count upon a net annual profit of five dollars per acre to make up the balance of one hundred dollars on the twenty-acre farm, and of two hundred dollars on the forty-acre farm. Considering the immense advantages arising from the purchase of supplies at wholesale, the sale of products in large quantities, and from working under able and expert management, this would appear to be a reasonable and conservative calculation.

This chapter is intended to treat only of the utilization of surplus capital in making homes for surplus people upon surplus lands. It touches upon the employment and organization of labor only so far as necessary to show how the capital may be used, conserved, compensated, and finally repaid.

The use of co-operative capital in making homes for those who live and work in cities and towns is well known. There are nearly five thousand building and loan associations in the United States. They have more than one million six hundred thousand members, and a paid-in capital, gathered mostly in very small sums, of over six hundred million dollars. They have put roofs over the heads of two hundred and sixty thousand American families.

Both for the lender and the borrower colonization with co-operative capital is safer and better than urban house-building with co-operative capital. A twenty-acre irrigated farm, with an industrious family working upon it under good direction, is better security for a loan than a twenty-five foot lot in the suburbs of New York with a house upon it. It is such because of its greater and more certain productive capacity, and because the man who has borrowed the money to make a farm is more certain of employment than he who has borrowed merely to build a house.

The man who borrows to build the house is usually dependent upon others for his living, in the sense that he is employed to work for wages. His income may be interrupted at any moment by the strike, the lockout, or financial panic. His employer may die or become insolvent. A new labor-saving machine or a new shipload of Italian immigrants may send him into the streets. When he gets old the house does not sustain him. When he dies it does not sustain his loved ones.

The man who borrows to make a home on the irrigated lands of the West works for himself and cannot be discharged. He is on the road to complete economic independence. Even in hard times he is sure of his living. Labor-saving machinery works for him and not against him. The coming of new swarms of foreign immigrants into the cities does not alarm him, for he feeds and clothes them. When he has passed the years of greatest activity the kindly soil goes on producing, and constitutes his old-age pension. When he dies the soil still continues to produce and to support his family, for it is his life-insurance policy. Viewed from every stand-point, co-operative capital can be employed to better advantage in colony-making than in urban house-building. Financially, economically, and socially—it may not be extravagant even to say politically—the results will be better and more far-reaching.

The City and Suburban Homes Company of New York, under the successful presidency of Dr. Elgin R. L. Gould, with the generous financial backing of some of the wealthiest citizens of New York, as well as of many small investors, is erecting model tenements in the great city and making model country homes in its suburbs. While the motive of this work is philanthropic, the method is distinctly commercial. It pays five per cent. dividends, yet serves the highest social purposes. Mr. D. O. Mills builds workingmen's hotels, and his praises are upon the lips of thousands who have enjoyed their comfortable shelter, yet he makes them pay four per cent. as regularly as government bonds. Many other instances of the safe and profitable use of capital in ways which benefit mankind might be quoted.

There lies the beautiful West, with room for one hundred million people. The people are in existence, and need the lands as badly as the lands need them. But their hands are tied. Only capital can untie them, and at the same time unlock the stores of natural wealth now imprisoned in desert soil and forest and mountain. Without co-operative capital the people cannot move, and without co-operative industry it would be idle for them to do so. It is not only new settlers for new lands that are wanted, but new institutions for new times.

CHAPTER IV

COLONY PLANS AND INSTITUTIONS

If surplus labor and capital are to be directed to the systematic development of surplus lands, they must work upon well-considered industrial and social plans and create institutions adapted to the times and the surroundings.

We have seen how the famous colonies of Colorado, Utah, and southern California were thoughtfully planned by their founders, how well they succeeded, and how their success exerted a wide and beneficent influence upon the regions in which they were planted. In our brief references to Holland we have observed the effect of natural environment upon the habits and institutions of the people, not only in their industry, but also in their society, and perhaps in their politics. In our study of irrigation as an economic force we have seen how imperiously it compels the small-farm unit, with its correlative effect of near neighbors and social advantages; how it commands the organization and association of labor in large ways, yet favors individual proprietorship of the many small units of land which make up the aggregate of a successful community. These are our landmarks in planning the wise use of land and labor and capital in the fertile valleys of the Far West.

Before we can satisfy capital we must show that there are security and earning capacity. In like manner there are certain fundamental requirements essential to satisfy labor. There are three things which human beings want — first, the certainty of a living, which includes food, clothing, and shelter; second, surplus means above a living for the improvement of the home, the education of the children, and provision against old age; third, satisfaction for the social instincts. These three things are as necessary to the contentment of labor as security and interest are vital to the satisfaction of capital.

The corner-stone of the colony's industrial system is the small, diversified farm, producing the variety of things which the family and community consume.

We have seen how the Mormon farmers prospered for fifty years by following this plan. They lived well in good times and bad, kept out of debt, and steadily accumulated a surplus to invest in banks, factories, stores, and temples. In certain years they would have realized larger cash returns if their lands had been exclusively devoted to corn, wheat, or hops. Southerners speculate in cotton; middle-westerners in grain; Californians in fruit. They enjoy brief periods of flood-tide, but at least half the time the tide is running out, and at regular intervals they find themselves stranded on the rocks and shoals left by its ebb. In the long run the Mormon workers have distanced them by steadfast adherence to the policy of collecting their living first from the soil, and having a surplus afterwards to dispose of in the markets. It is beyond question, then, that self-sufficiency is the first essential of a true industrial system in the arid region. Nothing should be purchased for cash which can be economically bought with labor.

Every valley of the West is surrounded by large and growing home markets, in the way of lumber and mining camps and railroad towns. Not a single State beyond the Rockies raises enough agricultural products to supply its own wants. The trade of the Pacific Ocean is expanding by strides and bounds. Under these fortunate circumstances it is an easy matter to plan profitable lines of industry for new colonies.

There are three lines of production which should be systematically followed, having first been carefully adapted to local conditions of soil, climate, and surrounding markets. These lines are as follows: First, the things consumed by the farmers themselves; second, the things now imported, but capable of home production; third, the things which distant communities consume but cannot produce, which will therefore bear the burden of transportation and are susceptible of profitable export. The first list consists of what the community eats, wears, and uses for shelter, or in its arts and industries. The second list includes almost everything grown from the soil or manufactured by skilled labor and machinery. It also includes poultry and dairy products and cured meats. The third list varies with different localities. The semi-tropical parts of California and Arizona find their surplus for export in oranges, lemons, olives, and fresh and dried fruits of all deciduous kinds. The more temperate regions in the West export the hardier fruits, such as apples, pears, peaches, and prunes. Fertile valleys, surrounded by Uncle Sam's great free pastures, produce a surplus of cattle and sheep, hides and wool.

Great sources of future profit may be found in a variety of simple industries, which demand only cheap machinery and a small amount of skilled labor. These are such industries as every small colony may have if possessed of a common fund for industrial purposes. They include creameries, canneries, pork-packeries, starch factories, and the like. Lumber and planing-mills, and various other small industries closely related to the life of an agricultural community, are also profitable and wholly feasible under these plans. Time and prosperity, with their gradual accretion of men of talent and experience, would open the way for the larger and more complicated industries, as they did among the Mormons. Wool and hides should not forever be shipped to Boston, and cloth and shoes forever imported from that place, so remote from all the raw materials it uses. If no capital were available except the savings of transcontinental freight, it would build many shoe factories and woollen mills in the regions where wool and hides are cheaply produced, and where millions must always be clothed and shod.

Having shown how labor may be employed so that it can never fail of its living, nor of a surplus above its living sufficient for the reasonable demands of human beings, we come now to the question of the organization and management of labor.

The system of labor should rest upon the independence of the individual. All that he can well and effectively do for himself he should be permitted to do. Such advantages as he may win by individual thrift, industry, and skill he is entitled to obtain and enjoy and to transmit to his children. He should not suffer from the indolence or incompetence of other men, or ask others to pay the penalty of his own shortcomings. The individual home, family, and farm constitute the unit of industry and society in the colony. But there is a sphere beyond the reach of the individual.

It is impossible for each small capitalist and proprietor to maintain his own store, so that he may purchase supplies to the best advantage; to operate his own selling agency, so that he may dispose of surplus products in the best markets and on the best terms; to erect and conduct his own industrial plants, so that he may condense and manufacture raw products into the most marketable form; to purchase and manage a large stock-ranch, so that he may pasture and fatten a small herd of cattle or flock of sheep. All these things require capital, special knowledge, and an amount and kind of labor which the individual and his family do not usually possess.

We have passed from the sphere of the single man or family to that of associated man. It demands the use of the aggregate capital of the community and the wise organization of labor. We must now have either competition or co-operation—competition, in which the few of large capital shall employ and exploit the many; or co-operation, in which the many shall organize their capital and their labor for mutual advantage and protection.

We may now apply the larger lessons learned from the Mormon system of stock companies, from the fruit exchanges of California, and from the co-operative societies of Europe. The modern corporation, and even the modern trust, point the way to prosperity for the army of producers who will occupy the now vacant West in the coming century. These are simply a means of combining the capital of many owners so that they may accomplish collectively what could not be done as well, or at all, individually. The advantages of this method are now so generally recognized that it is unnecessary to dwell upon them. It is important to remark, however, that the expert ability which a corporation with large capital can command, and the saving of waste which it can effect by eliminating competition and doing things upon a large scale, is as vital to a colony as to a railroad, a gas company, or a group of sugar refineries. The principle upon which aggregations of large capital are made applies as well to aggregations of small capital.

The colony capital should be handled by a local company owning the town-site, store, industries, and such other properties as experience proves to be useful and profitable to the community. In this company all of the colonists would be equal stockholders at the beginning, and every safeguard should be erected to make transfers of stock as difficult as possible, since it is desired to preserve equality of ownership in everything which is beyond the sphere of strictly individual control. So long as the settlers are under obligations to the founding capital—which will be until they have paid off their loans—the trustees of this capital will control the local company and its operations, as also the labor and land. The manner and advantages of this control are discussed in the next chapter.

We have, then, a community composed of a multitude of small landed proprietors working for themselves, under the direction of superior ability and experience, and equipped with sufficient working capital for both their private and public enterprises. It is an organized community, operated upon industrial plans thoroughly vindicated by the experience of the arid region during the past half-century. The financial plan does not differ materially from that of building and loan associations, nor the plan of conducting stores and industries from that of the successful co-operative institutions of Great Britain. There is nothing novel or experimental in the plan as a whole, except the application of old and proved principles to new conditions.

The project of co-operative colonization sometimes incurs the criticism of Socialists, on the ground that it does not provide a sure method of preserving equality in men's possessions. The fear is expressed that the abler, thriftier, and more grasping among the settlers will gradually acquire large means and make their fellows pay tribute to them. Such a result would be theoretically possible, but is hardly a practical danger. Though the twenty-acre irrigated farm has never yet produced a pauper, neither has it grown a millionaire, nor anything approaching a capitalist of ominous proportions. The tendency in colonies where irrigation is used, as we saw in an early chapter of this book, is towards the division of lands rather than in the direction of acquiring more. It is difficult to see how Socialism would give to an agricultural population any important advantages over this plan of co-operation, which preserves individual independence while providing for the solidarity of the community.

We come now to the social side of colony institutions. We have seen how the isolation of country life has driven multitudes to the already crowded cities. In the history of the most successful settlements ever made on irrigated land we have observed a simple method of giving to the owners of small farms most of the advantages of town life. This is accomplished by assembling their homes in village centres with outlying farms. This is an old custom in Europe, is the most universal plan in Utah, and has been adopted in many other western localities. It is not free from drawbacks, and should not be made obligatory upon the settlers, but experience has proven that in much the greater portion of the year the advantages are decidedly in favor of living in the town.

Most men are willing to consult the convenience and happiness of their families as much as their own. When they do this they realize what it is worth to have neighbors close at hand, and to live near to the school, church, store, post-office, and all else so essential to civilized life. The farmers who live in the town have the benefit of clubs, libraries, and various forms of instruction and entertainment. They and their families enjoy a full and rounded life compared with the lean existence of those whose society is mostly limited to quadrupeds. The farmer's village home must be ample. Not less than an acre is really satisfactory, but this is quite sufficient, considering that the farm is distant but a few minutes' drive, and that he participates in facilities elsewhere for the care of live-stock, if he has any considerable number. Furthermore, the farmer is interested in the growth of the town-site, and the more it gains in population and appearance the more he will realize from the sale of its business and residence lots.

A colony needs no political institutions other than those ordained by the State in which it is located. But the stockholders' meetings should be frequent and largely attended, resembling a town-meeting in New England. The colonists should advise about all their affairs, and exercise control in everything which does not affect the security of the founding capital. After the preliminary period of development is passed and the loans paid off, they will, of course, have absolute control of everything. But before this stage is reached they will have served a good apprenticeship under competent and sympathetic leaders, and have gradually grown up to the full size of their opportunities and responsibilities. Their town-meetings will furnish a parliamentary training of no mean value, especially to the young, as has been the case in New England. All should serve upon committees, and so gain personal familiarity with every phase of the colony business. These committees should be very numerous, and members should be rotated, so as to give them experience upon each.

Who shall estimate the future influence in the life of America and the world of a generation reared under such conditions and in the midst of such surroundings?

CHAPTER V

THE ADMINISTRATION OF CO-OPERATIVE SETTLEMENT

GIVEN favorable location, industrious settlers, and abundant capital, there is yet another element absolutely essential to the success of co-operative colonization. This is able and honest management. Good leadership is as necessary as sound principles, and executive capacity at the head as vital as earnest and faithful labor in the ranks.

This is the teaching of all past experience, not only in colonization effort, but in all co-operative undertakings, especially where capital has been supplied by one class for the use of another. The leadership required is of a rarer quality than that usually found at the head of financial and industrial enterprises. It calls not merely for brains, experience, and special aptitude, but for devotion, and almost for consecration, as well. There must be heart as well as head in the management of such affairs. A man with only large human sympathies would not succeed, but neither would a man with only business acumen. Both qualities are required for the successful management of men and money in a work which aims at the production of homes and institutions along with dividends.

When such leadership has been secured it should be given full control. It should have the power and be held to the responsibility. This responsibility should not be divided among subordinates, still less shared with the rank and file. The leader has placed in his hands, say, one hundred thousand dollars, and the destinies of one hundred families. The care of the money is an important trust, but the care of the families is a more sacred responsibility. The man who is willing and able to assume the burden of such a task should have the power necessary to its accomplishment, and the praise or blame which will follow the result. No man fit for the work would undertake it upon any other conditions. But the chief reason for vesting control in superior and responsible leadership is the welfare of the people themselves.

Almost without exception successful colonies have been ruled with the strong hand. Sometimes the power proceeded from religious superstition or fanaticism, sometimes from financial or legal obligation, and sometimes from sheer force of genius on the leader's part; but, without exception, the colonies which have succeeded have worked under one guiding brain and hand, while those that have failed did so through the dissensions and incompetency of the general membership. This has not been peculiar to our race and country, but to all races and countries. It was true of Plymouth, New Amsterdam, and Jamestown. It was pre-eminently true of the Utah settlements, and only a little less so of those of Colorado and California. It is worth while to glance briefly at recent foreign efforts to observe the working of the same principle.

Soon after the close of the Napoleonic wars, eighty years ago, the streets and roads of Holland were filled with idle and homeless veterans. A certain Dutch general suggested the employment of this labor in reclaiming agricultural lands and creating farms and homes, believing that it would be better to help the workless to independence than to extend charity. From this suggestion came the Beggar Colonies, and subsequently the Free Colonies, which have ever since absorbed the surplus labor of Holland. They have graduated thousands from beggary to tenantry, from tenantry to proprietorship.

The enterprise is purely governmental, and under the rigid control of able and responsible men. The man who asks for alms is taken to the Beggar Colonies and put at work. If he will not work he is flogged until he does, or until he escapes across the boundary of the industrious little nation which has no patience with the wilfully idle. In this beneficent colony the people are systematically taught the art of agriculture. After five years, if they have proven earnest and intelligent, they are transferred to the Free Colonies, where they are supplied with a very small farm and the necessary implements and live-stock, and with a house and lot in the village. They are given ample time in which to pay for the property, and charged very low interest on the use of the capital. The plan has been a financial, economic, and social success. The result is unquestionably due to the fact that men of superior intelligence and experience made the plan and administered it to the last detail up to the moment when the settler became a full-fledged proprietor.

The experience of the German government in dividing and settling with small farmers great landed estates in Prussian Poland furnishes an equally striking illustration. This work was undertaken for the triple purpose of relieving the congestion of cities, staying the decline of rural life, and preventing the further emigration of useful citizens to foreign parts. It is practically a government enterprise, conducted through a system of land-banks.

When the owner of a large estate desires to sell, the government sends a commission to examine and report upon its fitness for colonization. If the report is favorable the land-bank buys the estate with an issue of bonds, which the government has guaranteed. A part of the fund is paid to the owner and another part reserved to assist settlers. All the work of subdivision, drainage, and other preparation for settlement is done by the government, even to the erection of houses and other buildings. Successful applicants are supplied with seed, livestock, and provisions until their farms become self-sustaining. They are asked only to repay the actual cost of their homes and farms and low interest on the investment, the payments extending over many years. In the mean time the bonds are secured by lands and improvements. The control of the entire enterprise, from start to finish, is held in firm and experienced hands, and it is needless to say that these colonies are successful.

Australia furnishes an instance of a different kind. Young as it is, its chief cities already feel the pressure of over-population. Such was the case with Adelaide, the capital of South Australia, in 1894.

In that year the Parliament of South Australia passed the Village Settlement Bill, setting apart for colonization certain arid public lands on the Murray river. The measure provided for an advance of two hundred and fifty dollars for each member of the colony, but vested the management largely in the settlers themselves. They were to be accompanied by a government official, but his power was that of moral influence rather than of legal authority. Under this plan several settlements were started, and for a time seemed to promise excellent results. But the most recent information the writer has been able to obtain is to the effect that the colonies went to pieces upon the rock of internal dissension, as has so often been the case in the absence of strong, responsible leadership.

The experience of the Chaffey Brothers, of California, who went to Australia to found colonies at the request of the government, was quite similar. As long as the people worked upon plans the projectors had learned from their valuable experience in California, and accepted direction, they prospered. When the people took full control for themselves, dissension and demoralization quickly ensued, to be followed by disappointment, and at least partial defeat.

Wherever the conditions of settlement were such as to call for organized industry and society, all experience teaches the absolute need of superior brains and character at the head of affairs. This is not strikingly true of the settlement of the vast country between the Alleghany and the Rocky Mountains during the past one hundred years. In that case both the locality and the times favored individual effort. But the waste-places which remain to be conquered, not only in the United States, but in nearly all other parts of the world, present conditions which demand the association and organization of both labor and capital. Even if physical conditions did not make this demand, existing economic facts would be equally imperative. The small capitalists and producers must choose between organizing themselves and being crushed by the organizations of other men.

Recurring to the matter of co-operative colonization, we see that colonies cannot be made without capital; that capital cannot be had without security and dividends; that security and dividends cannot be assured without able and experienced management; that able and experienced management cannot be obtained without absolute authority in all essential matters, at least while the farms, industries, and institutions are in the formative stage and working upon borrowed means. Thus the conclusion is forced upon us, alike by world-wide experience in colonization effort, by economic conditions of the time, and by the consideration of the demands which capital will justly make before lending itself to such enterprises, that the road to independence for surplus people on surplus lands lies first through the field of discipline, obedience, and submission to the authority of some form of administration.

What should this form of administration be? In Holland and Germany we have seen the power exercised by the government, and in Utah by the church. In the colonial days of the Atlantic coast it was exercised by civil government closely dominated by the church and, even more extensively, by chartered companies formed for the purpose of colonization and development. Where colonies have succeeded without guidance from government, church, or chartered companies, the result has been due to the ascendency of extraordinary men, and, more rarely, to the character, spirit, and temperament of the people themselves. These latter instances furnish no light for our present problem, since capital will not invest upon the mere chance of finding extraordinary men or colonists of rare character and spirit.

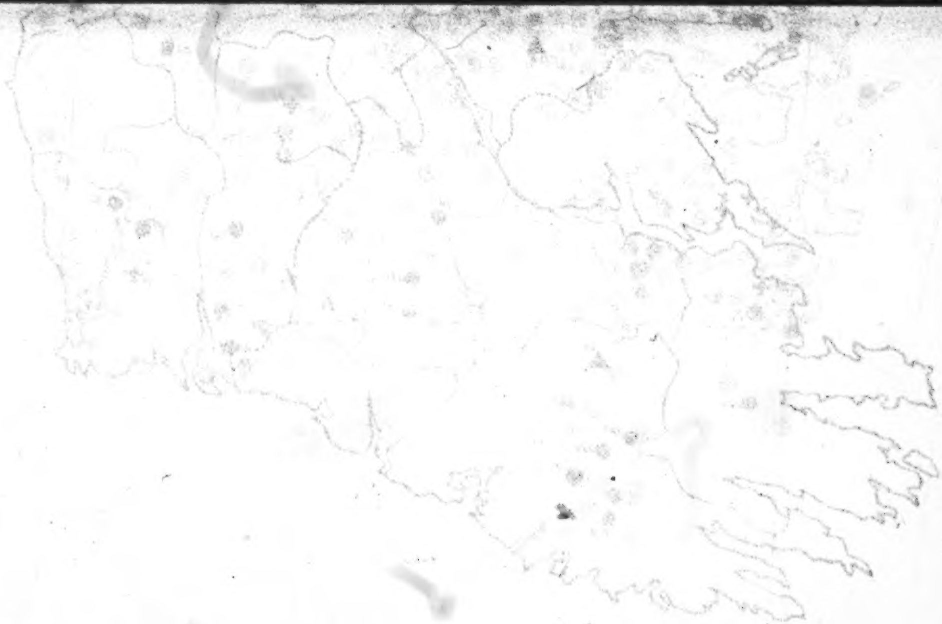
The current history of Ireland furnishes us with a lesson of great importance. In that country economic improvement has recently superseded political agitation in the popular mind. The result is an industrial and social uplift which has not yet attracted the world-wide attention it deserves. The movement is the result of the earnest labors of the Right Hon. Horace Plunkett, Mr. Thomas P. Gill, Mr. R. A. Anderson, and their colleagues in the Irish Agricultural Organization Society. Their methods are not exactly parallel to those which could be used in the settlement of a new country, but the only difference is that which obtains between building a new house and rebuilding an old one.

Before the present movement was started Ireland was about as hopeless a place for the small farmer as could be discovered upon the map of the world. Those who produced the wealth from the soil bought their provisions and sold their crops to the poorest possible advantage, and borrowed money at crushing rates of interest. Their natural markets were occupied by Belgian, Dutch, and French farmers, who had been so fortunate as to learn at an earlier day the value of organization on co-operative lines. In the face of much opposition on the part of his countrymen, especially of the professional politicians, Mr. Plunkett set out upon the career of industrial reformer and up-builder. Knowing Ireland by heart, and thoroughly informed of the methods and results of co-operation in other countries, he set out upon a crusade for the industrial regeneration of his countrymen.

He urged the virtues of the higher agriculture, the benefits of organization for the purchase of supplies and sale of products, and the incidental social advantages to be gained through commercial co-operation. He preached to the lord in his castle as well as to the peasant in his cottage. He urged upon the rich the duty they owed to their country and their fellow-men, calling upon them to give of their means, their education, and their experience, in organizing the people to use labor, capital, and land to better advantage. The movement strictly avoids politics, but has brought representatives of all other elements of Irish life into the great society of which Mr. Plunkett is president and Mr. Anderson secretary.

The society has dotted the map of Ireland with co-operative institutions of every kind. Its own relation to these institutions is not that of stockholder or manager, but is purely advisory and paternal. The society sends out lecturers to talk to the people and show them the way to prosperity. It publishes books, pamphlets, and an entertaining weekly newspaper. It supplies experts to conduct experimental farms, establish and equip various small industries, organize commercial associations, and supervise the bookkeeping of the various enterprises. In a word, it puts at the disposal of the poor farmers of Ireland the brains and experience of superior men. Working with the benefit of these brains and experience, a population which once seemed the most discouraged and hopeless in Europe is rising steadily and grandly in the industrial and social scale.

It is borrowing from village banks, at four per cent. annual interest, money which it formerly had of usurers at two to five per cent. a month. It has smashed the ring



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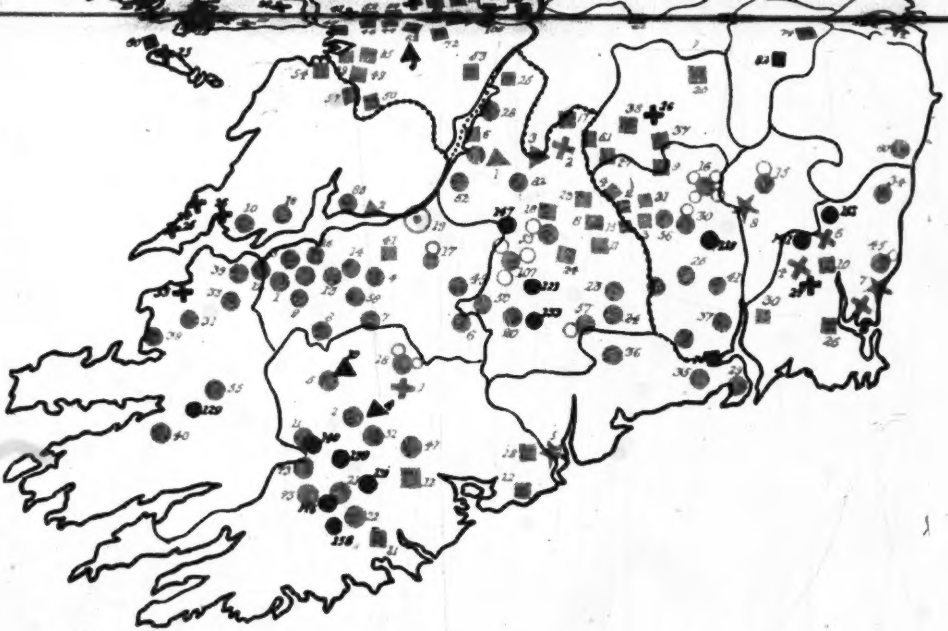


LOCATION OF CO-OPERATIVE INDUSTRIES IN IRELAND

which formerly made its own exorbitant price for fertilizer, and now buys this material, so necessary to the productiveness of the Irish soil, at wholesale rates. It markets its products in large lots in the best markets, and, to some extent, dictates the cost of transportation. It raises more various and profitable crops, and converts them into finished product in its own factories. It furnishes itself with co-operative credit, so that it is possible to prevent the sacrifice of products for ready money and to hold them until the market is most favorable. As an inevitable consequence of this remarkable industrial uplift, the social and intellectual life of the people is steadily rising.

It is impossible in this brief reference to the work of Mr. Plunkett and his associates to even hint at all the ways in which they are striving to show their countrymen that the road to prosperity lies through co-operation. Already the economic gain is vast, and the promise even more so. It goes almost without saying that the results will be such as to prevent the further depopulation of the island by misery and famine, and perhaps even to recall thousands of its sons and daughters from over the sea.

Ireland had no problem of reclaiming and settling new lands. Her vexed question was how to make comfortable and happy the people who already crowded her small territory. But the experience which has been referred to illustrates two points wholly pertinent to this chapter—the virtues of organized production and exchange, and the necessity of enlightened and devoted leadership.

We may go back to the seventeenth century and get light for a portion of our present problem from the history of the Massachusetts Bay Company. Chartered by royal grant and given possession of large tracts of virgin land, mostly covered with dense forests, this company planned settlements that still flourish. It laid out colonies, or "plantations," obtained and organized parties of settlers, appointed leaders, developed trade, planted institutions. The economic conditions of that day differed so widely from those now prevailing that we can learn from this experience only the abstract advantages of good leadership and a willing following. But the organization which should do to-day for the surplus people of the Atlantic coast and the surplus lands of the Far West what the Massachusetts Bay Company did for the surplus people of England and the surplus lands of New England nearly three hundred years ago, would in some respects follow closely upon the lines of its distinguished prototype.

After this hasty but world-wide glance at the experience of the past, we are prepared to consider what is required for the successful administration of a broad work of co-operative settlement in the waste-places, particularly of our own continent.

The people of the United States are not yet ready to have their government engage in a work pertaining so closely to the lives and fortunes of a few thousand, or hundreds of thousands, out of their many millions. There would be great opposition to the use of the national means or credit in founding homes, industries, or society for a comparatively few. On the other hand, it is not in accord with our best traditions or the genius of our institutions that it should be done by a church, or by any number of churches, nor that it should be undertaken as a matter of charity. It is work for such a company as Dr. E. R. L. Gould founded in New York to build comfortable suburban homes for those who could gradually pay for them. It is a work worthy to command such popular support as Mr. Plunkett has won for his cause in Ireland. It is a work which calls for a combination of business sagacity, administrative talent, and humanitarian impulses.

An organization which should meet the present needs of the American people in this respect, and rise to its full opportunity, would acquire as much of the idle irrigation property in the West as was needed for its purpose, and might gradually absorb the larger portion of such properties. It would prepare to found colonies in different localities capable of expansion, so that after a time its plans would be in operation under different conditions of climate, soil, and markets. It would demonstrate the demand for its existence by receiving applications from indefinite thousands of good families, who would be glad to put their labor against necessary land and capital. It would set apart from its property, by deeding outright to a responsible trustee, such of its lands as were best adapted to settlement, issuing against these lands bonds bearing six per cent. interest and falling due in ten years. Thus these bonds would be specifically secured upon the lands to the improvement of which the labor and capital would be applied, and would have the further guaranty of an organization owning valuable property created by former investments.

The organization would then proceed to obtain its settlers by a process of careful selection and conduct them to the colonies. It would intrust the work of administration to men of great ability and experience, who would systematically direct the labor to the highest improvement of the land and the speediest repayment of the capital. In a previous chapter we have seen the industrial and social organization of the colony, the management of the labor, the sources of profit, and the method of paying interest and gradually providing for the sinking fund from wages and profits.

This plan meets every requirement of the situation, and will solve the problem of bringing together the surplus land, labor, and capital, if the writer's deductions from the world's experience are correct. No other plan seems feasible for this time, this people, and this country.

It is necessary to say a closing word under this head to those who will object to the feature of a strong control of the colonists on the ground that it is not democratic, and that it violates the true spirit of co-operation.

The whole history of the past shows that those who set out upon the work of colony-building must make themselves amenable to leadership in order to succeed. The writer regrets that this conclusion has been forced upon him as the result of patient studies of colonial effort in our own and in foreign countries. It would be far more agreeable to say that all the people need is sufficient capital, then access to the land, and that when these are provided they are perfectly capable of working out their own salvation. But such is not the fact. They will waste their time and squander their resources in learning how *not* to do it. They will fall into hopeless dissensions, break up into warring factions, and so defeat their own precious ends. They will set the stamp of failure upon the very institutions they are so anxious to establish and perpetuate. They will even set back for a time the development of the only portion of the United States which now invites them to homes and independence.

The time may come when all men will be equal financially, intellectually, morally, and socially. It has not come yet. The many must still seek the leading of the few, and happy are they who can receive it under conditions which guarantee to them the full fruits of their individual labor in small things and of their co-operative work and capital in large things.

A colony, under modern conditions, is an organized community. Whatever is organized requires competent leaders and obedient followers. No man who followed Dewey at Manila, or Roosevelt to the heights of San Juan, was ashamed to take the commands of his superior officer. Neither in the capital city of the Philippines nor upon the rugged hills of Cuba were there prizes so precious to humanity as those which lie fallow in the voiceless valleys of the West. The man who will not incur discipline to plant his flag upon the shores of prosperity or the heights of success deserves no better fate than to be trampled under the feet of his stronger fellows in the struggle for existence. The pride which will not serve in the ranks is a pride that will never wear the star or the epaulet.

CHAPTER VI

ADJUSTING OLD IDEALS TO NEW CONDITIONS

We have now scanned the wide field open to domestic expansion and considered the methods by which it may be conquered and occupied by the masses of our people. We have observed the character of institutions which are growing up in conformity to the physical conditions and environment of the West, and have dwelt upon the amplification and extension of these industrial and social principles as the means of planting a wide-spread civilization in the vast regions to be colonized in the future.

It remains to ask ourselves these vital questions: Do these methods and institutions accord with the traditions and economic ideals of the dominant race? Are they suited to the changed conditions under which we live and to the fateful struggle between machinery and capital on one hand and individual man on the other?

We have dealt with our subject almost exclusively from the stand-point of agriculture. It has been truthfully said that "the farmer is the only necessary man." Agriculture is the foundation of civilization. The institutions of every people are chiefly influenced by the manner in which the soil is owned. The race which sprang from the Saxons has always clung closely to the ideal of individual proprietorship. When this race planted itself in England it immediately took firm possession of the soil. It was thus that it was able to overcome the Celts, to absorb the Angles, to buy off and then repel the Danes, and even to survive the Norman conquerors.

When the children of the Saxon farmers and small tradesmen first settled in America they proceeded to make immediate provision against the possibility of landlordism and great estates. They did this by rejecting the law of primogeniture, by distributing the land equally among all the children of the deceased, and by making transfers of land among the living as easy as possible. So they rooted their democracy in the ownership of the soil. Individual proprietors owned homes and farms, and rose or fell according to their thrift and industry, or their lack of these qualities. Individual initiative was left untrammelled, yet in things beyond the reach of the one man the colonists acted upon a plan of natural and simple co-operation. Fishing was their first industry, and here they worked in groups, each man sharing the catch in proportion to the value of his service. The social and religious life of the community was highly organized for the time and place.

The tendencies of development in the West, and the definite plans of colonization suggested in previous chapters of this book, are distinctly in line with the traditions of the Anglo-Saxon race so far as land ownership is concerned. There are, and there are to be yet more in the future, vast multitudes of men secure in the possession of small landed estates. These men are free to use their land as they see fit, and to have the exclusive enjoyment of the fruits of their own labor. They do not depend upon the community, but the community depends upon them.

Social science has clearly demonstrated that when conditions encourage dependence upon the community or State, self-reliance and individual ambition and energy diminish in proportion, and that this result inevitably lessens the power of the State to assist those who are more and more inclined to lean upon it. There is no such danger in this programme of social progress. "The only necessary man" is here entirely dependent upon himself. The community will neither water his lands nor reap his crops. He works or he perishes. He thrives according to his intelligence and industry, or fails to thrive because of his ignorance and sloth. For his ignorance and sloth he is himself solely responsible, because he has the facilities of a good education and every incentive to intelligent and regular labor. The community of which such men are the units is certain to be healthy and strong, because their independence and prosperity will constantly feed rather than draw upon it.

In providing for the co-operative ownership of stores, factories, commercial associations, and other instrumentalities of manufacture, distribution, and exchange, do we depart from the traditions of the race? If so, it is not the race nor its ideals which have changed, but the conditions of industry and commerce.

The settlers of the seventeenth century, and even of fifty years ago, had little need of co-operative industries. Their women spun the flax and wove the wool. Their men made the shoes and furniture. Their relations to outside trade and industry were very slight. They took from their fields, their woodlands, and their herds nearly all which they used for food, clothing, and shelter. In almost nothing did they pass beyond the sphere of the individual man.

To-day expensive machinery manufactures in great factories what the simple tools and crude art of the forefathers supplied. Every part of the world is in close touch with every other part, and all production beyond the power of the individual man must be organized either as a private, a public, or a co-operative enterprise. The choice lies in the servitude of the masses to great employers and their transformation into a kind of factory peasantry, or in state Socialism, or in proprietorship vested in a multitude of small shareholders. Which of these three most nearly accords to Anglo-Saxon habit, thought, and ideals?

Clearly it is the third method, since the fundamental idea of this race and people has always been that each man is entitled to the fruits of his labor. The ideal is that each man shall receive exactly what he produces—no more, no less. Under the conditions prevailing before the advent of labor-saving machinery and the accumulation of great private fortunes, it was not difficult to realize this supreme aspiration of our race. But in planning new institutions it is highly essential to take the changed conditions into account.

If the operation of stores, factories, and other lines of business requiring large capital is left to purely private enterprise, it is impossible for the vast majority of men to obtain and enjoy the full fruits of their own labor. Massachusetts industrial statistics show that the average product of the factory-worker in that State is about two thousand dollars, and the average wage less than five hundred dollars. It is thus apparent that the operative produces four times as much as he receives, and that three-fourths of the fruits of his labor is used to feed, clothe, and educate other men's children rather than his own. This result is not due to the greed or inhumanity of employing capitalists, but is the natural result of individual enterprise under modern business conditions.

A system which transfers to a few the fruits of labor performed by the many is a system which should not deliberately be chosen as a part of the economic structure we are planning for regions which remain almost wholly to be settled in the future. Wise men do not repeat the blunders of their fathers when the evil consequences have become apparent.

Socialism, though it may be the ultimate goal, is a remedy for which the world is not yet prepared, and least of all the Anglo-Saxon world. The present strength of its propaganda is not among those who speak the English tongue. We may admit the evils of unrestrained individualism applied to large enterprises under the new business conditions, without flying to a system which obliterates the individual. The surpassing virility of our race and people in economic and political ways is doubtless largely due to the scope which their institutions have permitted to private initiative, energy, and ambition. We cannot safely take these essential qualities out of our life. They are more necessary to the development of new countries than to the established routine of old communities.

What is needed is a true adjustment of the relations of individual to associated man. Socialism cannot furnish the solution of this problem until education and Christianity shall have vastly raised the common standard of intelligence and morals. Under Socialism some men would receive more than the fruits of their labor, while others would receive less. This result would be due not only to differences of talent, but of industry and character. The divine injunction was, "In the sweat of thy face shalt thou eat bread," not, "In the sweat of other men's faces shalt thou eat bread," nor even, "Partly in the sweat of other men's faces." Justice is satisfied, according to the Anglo-Saxon ideal, when men are given equal opportunities. Neither Socialism nor unrestricted private control of large industrial affairs meets this fundamental condition under the circumstances of modern life.

Let us see how co-operative enterprise adjusts itself to all the circumstances of the business situation, as well as to the racial tradition so precious to our people.

In the operation of a factory there are the two necessary elements of capital and labor—the one representing buildings, machinery, and working funds; the other, productive power. Under co-operation the capital is supplied by a large number of shareholders who have saved the money from the proceeds of their own labor. It is perfectly true that "capital is stored labor," but the problem is to have it stored in the hands of those who performed it. Just here is the essential difference between the private and the co-operative factory. The former is mostly capitalized by those who organized and exploited the labor of others, while the latter is capitalized by those who actually worked and saved, so that their factory investment represents the fruits of their labor, and they are as much entitled to receive its continuous results as if they had invested it in poultry or cows.

It is neither necessary nor desirable that stockholdings in such an enterprise be exactly equal, since men differ both in their earning and their saving capacities. The important consideration is that all shall have the same opportunity to earn, to save, to invest, and to reap the reward of investment. Private enterprise denies men this opportunity and restricts it exclusively to those who have large capital, generally acquired by exploiting the labor or taking advantage of the necessities of others. Co-operative enterprise opens the door to all and permits every man to participate in the profits of those industries which are beyond the reach of individual strength or capital. It is easy to erect safeguards to prevent control from falling into the hands of a few individuals.

Co-operation shares its profits with labor as justly as with capital. While the wage-scale must necessarily conform to the world's standard in cost of production, the worker has the opportunity to invest his savings in the industry and to share in a premium paid to all who attain a quality of work above a fixed standard. Skilled labor must receive higher pay than unskilled, and men fitted by ability, knowledge, and experience to fill places of high responsibility must command the same wages in co-operative as in private employment.

Co-operation thus furnishes a method by which the masses of men may obtain the benefits of labor-saving machinery and of modern production upon a large scale and preserve themselves from degradation or ruin at the hands of those new economic forces. It is a method which adjusts itself to the old ideal of individual independence and of giving the laborer the full fruit of his toil, yet provides for that economic solidarity which forms so conspicuous and reasonable a part of the demands of radical social reformers. In this case, unlike Socialism, solidarity is effected without weakening the power of the community by first weakening the power of the individuals who compose the community.

Co-operation is no idle dream or vague speculation. It is one of the fixed facts in the world's economy. In one form or another it flourishes in many countries, but it has found most fertile soil among English-speaking peoples. Reference has already been made to what has been accomplished in Utah and in Ireland among agricultural populations, and by building and loan societies in cities and towns throughout the United States. In England co-operation has assumed enormous proportions, and is extending rapidly in every direction. It conducts stores, farms, and all varieties of shops, factories, and mills. In some instances it even maintains railroad and steamship lines. It has surplus profits to invest in new enterprises, in model town and suburban homes for the workers, and even in a delightful summer retreat for convalescents among the Scottish Highlands. Mr. Henry D. Lloyd's recent book on *Labor Copartnership* did much to enlighten the world concerning the wonderful but silent movement which is enabling the British masses to help themselves and each other along the upward path of improved social and industrial conditions.

The growth of co-operative fruit exchanges in California is another luminous instance which goes to prove the capacity of our race to settle its own problems through associative effort. These exchanges are doing an annual business of many millions and performing the various functions of collecting, packing, shipping, and marketing a vast product over a large area. They were the outgrowth of conditions which had become intolerable, and furnish further interesting proof of the fact that when an intelligent and self-reliant people have suffered sufficiently they will find the way out.

In the plan of co-operative settlement outlined in a previous chapter, attention was chiefly directed to agriculture and small industries closely related to the soil. The same business principles are applicable to larger industrial plants and to the utilization of natural wealth other than the land. With co-operative capital and labor, valuable forests, quarries, and mines of both base and precious metals could be made to yield their profits for the enrichment of the many rather than of the few. But this movement is yet in its early stages, struggling to vindicate the truth of its fundamental principle of the combination of surplus land, labor, and natural resources under conditions which furnish security and profits to each. Its horizon will constantly expand until it shall include the world-wide sky.

The common objection to co-operation is that it does not furnish the ultimate remedy for all social ills. It is said that it will do little good to put a thousand competing co-operative factories and farms in place of a thousand competing private factories and farms. In the first place, it is a gain to have the profits of industry and trade distributed more evenly throughout the community. In the second place, when competition and overproduction shall lead to the federation of co-operative industry, as is already the case with private enterprise, the result can only operate to the benefit of the masses. A trust or series of trusts which should include the entire public would be wholly harmless, since it would be organized for the people rather than against them.

It is not important to speculate as to what lies beyond co-operation. The thing itself is a distinct forward development in the work of economic evolution. It comes as the natural product of a wonderful era of competition, which has ended in the union of competitors as the price of self-preservation. During the closing years of the nineteenth century Capital has taught Labor the great lessons of combination, association, and organization. It remains for Labor to put these lessons into practical effect during the twentieth century, and to make that period luminous with the rise of the common man.

CHAPTER VII

LOOKING FORWARD TO THE GREATER REPUBLIC

IMAGINE the Republic of the twentieth century, all its magnificent resources under process of development on lines of enlightened co-operation, approved alike by the sane business sense and the humanitarian instincts of the people!

Behold the out-swinging gates of the West, opening at last the wealth of surplus resources to the throngs of surplus people—the gates unlocked by the magic of surplus capital!

See how the "uneasy" have "planted new colonies," as Edward Eggleston said they did in all past stages of the American emigration; how, under the impulse of this new forward march, the Republic has again surpassed the monarchies of the Old World "with giant strides," as Andrew Carnegie has shown that it did in a past era; how "the desert has blossomed with the homes of men," as Thomas B. Reed predicted; and then observe how all these things have defeated the grim prophecy of Lord Macaulay! But the material triumph is only the poorest aspect of the new achievement.

Here are millions of free men who live upon their own soil, under their own roofs, and work for themselves. Here is a society which has mastered the machine and made it work for man rather than against him. Here is a people who have organized capital so that it works for the many rather than the few.

Here is the finest flower of Anglo-Saxon civilization, with personal independence and ambition still preserved as the robust inspiration of all progress, but with everything beyond the sphere of the individual firmly held by associated man.

Here are communities which have averted catastrophe by adjusting old ideals to new conditions—by building their economic edifice on the three foundation-stones of private ownership of homes and farms, co-operative ownership of stores and industries, and public ownership of public utilities.

Instead of crowded cities festering with vice and poverty, throughout Arid America are farms that blend into beautiful towns, and towns that shade almost imperceptibly into peaceful farms. Here are country people who enjoy all the advantages of town life, and townspeople who know the independence of the country. Here are social conditions where the entire population enjoys the privileges of the club and the blessings of the public library.

Here are schools and colleges training young men and women not only in the arts and sciences, but in the equally valuable lessons of co-operative production and administration.

In a word, here is America, under the powerful dominance of the ancient Saxon spirit, engaged in the conquest of its waste-places and the making of new forms of civilization worthy of the race, the place, and the age.

In this vision of the future there is nothing impracticable. The field, the opportunity, and the people are ready. The hour is ripe for the advance. The silent command that speaks to men's minds through resistless economic forces has gone forth.

The American people will press on, not through bloodshed or violent change, but wisely, patiently, and surely —by gradual industrial and social evolution—to the realization of their great destiny,

That destiny is to illustrate the highest possibilities of democratic institutions.

APPENDIX

NOTE AS TO METHODS OF IRRIGATION

To those who are unfamiliar with the life of the arid region the actual process of irrigation seems a deep mystery. They regard it as an effort to overturn the laws of nature, and think it must be accompanied by a struggle as severe as it is inscrutable. But irrigation is, after all, a perfectly natural, and even a familiar, process. The man who waters his plat of grass and the woman who waters her door-yard pansies are irrigators in a rude and humble way. The citizen who grumbles at the sight of withered lawns in a public park during a dry summer yearns for irrigation without knowing it. A generation which has harnessed the lightning should see nothing incongruous in the ancient expedient of storing the rain and distributing it to meet the varying needs of plants which nourish human life.

The control of water for irrigation in the West presents about the same problems to the engineer as the control of water for domestic purposes in large cities and towns. The water must be diverted from a flowing stream at a level sufficiently high to command the territory to be irrigated; or it must be impounded in reservoirs at a season of floods or unusual flow, such as occurs everywhere when the ice and snow are melting; or it must be sought in the bowels of the earth by means of wells and lifted to the surface by pumps, except in the case of artesian waters, which flow out of the mouth of the well by reason of their own pressure.

The principal difference between securing a supply for domestic and for agricultural purposes is that in the case of the former the water must be as pure as possible, while in the case of the latter the impurities which gather in ponds and streams have a distinct commercial value as fertilizers. The sewage of Paris is used for irrigation purposes with wonderful effect. The same thing is done at Los Angeles, and doubtless will be done in many places hereafter. Neither is it necessary, as a rule, to make such elaborate provision for the distribution of water through underground pipes in the case of agriculture as in that of domestic water supply. In the vast majority of instances irrigation water flows in open channels. Where it is otherwise it is because the precious fluid is scarce, and therefore dear, so that every drop must be guarded against loss by evaporation or by seepage into the ground.

Irrigation works in the West range from rude and simple ditches, taking their supplies from mountain brooks where the water has been diverted by means of small brush dams, to great masonry walls which block the outlet of deep canyons, holding back the water, which is transported through pipes, flumes, and cemented ditches to rich lands miles away. In the one case the works have been constructed by a small association of farmers, using their own labor and teams; in the other, millions of eastern and foreign capital have been invested. In both cases the water is led through main canals to central points in the territory to be reclaimed. These mains are of all sizes, depending entirely upon the volume of water required. They are frequently not more than six feet wide, though some of the canals in the San Joaquin Valley are one hundred and twenty feet in width. From these mains lateral ditches reach out in various directions. The individual farmer taps the lateral with a shallow ditch, usually made with a plough, and thus conducts the water where he wants it through his own private system of distributers. The management of the waters, when the system has once been perfected, is so simple that a child can attend to it. Furnishing arid lands with irrigation facilities is really a less formidable task than supplying cities with water for domestic and fire purposes. The one process is no more mysterious and unnatural than the other.

Although irrigation is both ancient and universal, the Anglo-Saxon never dealt with it in a large way until the last half-century, when he found it to be the indispensable condition of settlement in large portions of western America, Australia, and South Africa. Through all the centuries of the past the art has been the exclusive possession of Indian, Latin, and Mongolian races. Its earliest modern traces in this country are found in the small gardens of the Mission fathers of southern California. They brought the method from Mexico and taught it to the Indians. But the real cradle of American irrigation as a practical industry is Utah.

In the hands of the Indians and Mexicans of the Southwest irrigation was a stagnant art, but the white population studied it with the same enthusiasm it bestowed upon electricity and new mining processes. The lower races merely knew that if crops were expected to grow on dry land, they must be artificially watered. They proceeded to pour on the water by the rudest method. The Anglo-Saxon demanded to know why crops required water, and how and when it could best be supplied to meet their diverse needs. He has thus approached by gradual steps true scientific methods, which are producing results unknown before in any part of the world.

The earliest method of irrigation is known as "flooding," and is generally applied by means of shallow basins. A plot of ground near the river or ditch from which water is to be drawn is inclosed by low embankments called checks. These checks are multiplied until the whole field is covered. The water is then drawn into the highest basin, permitted to stand until the ground is thoroughly soaked, and then drawn off by a small gate into the next basin. This process is repeated until the entire field is irrigated. This is the system practised on the Nile, where the basins sometimes cover several square miles each, while in the West they are often no more than four hundred feet square. There is both a crude and a skilful way to accomplish the operation of flooding, and there is a wide difference in the results obtained by the two methods. The Indian and Mexican irrigators, in their ignorance and laziness, seldom attempt to grade the surface of the ground. They permit water to remain in stagnant pools where there are depressions, while high places stand out as dusty islands for generations. All except very sandy soils bake in the hot sunshine after being flooded, and the crude way to remedy the matter is to turn on more water. Water in excess is an injury, and both the soil and the crops resent this method of treatment.

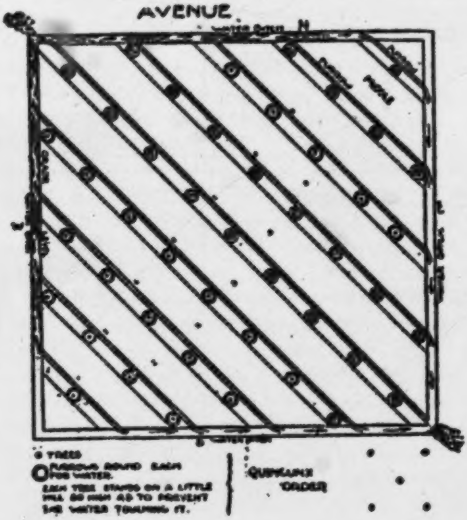
The skilful irrigator grades the soil to an even slope of about one inch to every hundred inches, filling depressions and levelling high places. He "rushes" the water over the plot as rapidly as possible, and when the ground has dried sufficiently cultivates the soil thoroughly, thus allowing the air to penetrate it. The best irrigators have abandoned the check system altogether, and have invented better methods of flooding the crops. Cereals and grasses must always be irrigated by flooding, but the check system seems likely to remain only in the land of Spanish speech and tradition, where it was born. In Colorado wheat and grass are generally irrigated by a system of shallow plough furrows run diagonally across a field. The water is turned from these upon the ground, and permitted to spread out into a hundred small rills, following the contour of the land. Some farmers bestow great pains upon this method, and succeed in wetting the ground very evenly. Another method of flooding fields is now much used in connection with alfalfa, a wonderful forage plant extensively cultivated throughout the arid region. This produces three crops a year in the north and six crops in the south, and is not only eaten by stock, but by poultry and swine. To find the best method of watering this valuable crop has been the object of careful study and experiment in the West. It is now accomplished by means of shallow indentations or creases, which are not as large as furrows, but accomplish the same purpose. These are made by a simple implement at intervals of about twelve inches. They effect a very thorough and even wetting of the ground.

The scientific side of irrigation is to be studied rather in connection with the culture of fruit and vegetables than with field crops. It is here that the English-speaking irrigators of the West have produced their best results. California has accomplished more than any other locality, but nothing was learned even there until the man from the North had supplanted the Spanish irrigator. The ideal climatic conditions of California attracted both wealth and intelligence into its irrigation industry. Scarcity of water and high land values operated to promote the study of ideal methods. Where water is abundant it is carried in open ditches, and little thought is given to the items of seepage through the soil and loss by evaporation. Under such conditions water is lavishly used, frequently to the injury rather than the benefit of crops. But in southern California water is as gold, and is sought for in mountain tunnels and in the beds of streams. A thing so dearly obtained is not to be carelessly wasted before it reaches the place of use. Hence, steep and narrow ditches cemented on the bottom, or steel pipes and wooden flumes, are employed.

This precious water is applied to the soil by means of small furrows run between the trees or rows of vegetables.

The ground has first been evenly graded on the face of each slope. The aim of the skilful irrigator is to allow the water to saturate the ground evenly in each direction, so as to reach the roots of the tree or plant. The stream is small, and creeps slowly down the furrow to the end of the orchard, where any surplus is absorbed by a strip of alfalfa, which acts like a sponge. The land is kept thoroughly cultivated, and in the best orchards no weed or spear of grass is ever seen; the water is too costly to waste in the nourishment of weeds. Moreover, it is desired to leave the soil open to the action of air and sunshine. Nowhere in the world is so much care given to the aëration of the soil as in the irrigated orchards and gardens of the West. Too much water reduces the temperature of the soil, sometimes develops hard-pan, and more frequently brings alkali to the surface. For these reasons modern science has enforced the economical use of water, reversing the crude Mexican custom of prodigal wastefulness. The success of the furrow method depends somewhat upon the texture of the soil, and there are places where it cannot be used at all. Such localities are not considered favorable to fruit culture.

Of late years in California the application of water by furrows has been brought to a marvellous degree of perfection. What is known as the "Redlands system" is the best type of irrigation methods known in the world. Under this system a small wooden flume or box is placed at the head of the orchard. An opening is made opposite each furrow, and through this the water flows in the desired quantity, being operated by a small gate or slide. The aperture regulates the flow of water accurately, and the system is so simple that, after it is once adjusted, its operation is as easy as the turning of a faucet. The farmer who grows his crops on a fertile soil, under almost cloudless skies, with a system controlling the moisture as effective as this, may be said to have mastered the forces of nature. The quality of the fruit has improved immensely since the California methods were perfected. Every fruit-grower realizes that the profit in his business comes mostly from the first grade of fruit. Scientific irrigation makes it possible for him largely to increase the percentage of the best fruit, and the difference which this makes in the earning capacity of his acres is surprising.


AVENUE
WATER DITCH N
S WATER DITCH
⊙ TREES
O FURROWS ROUND EACH FOR WATER.
EACH TREE STANDS ON A LITTLE HILL SO HIGH AS TO PREVENT THE WATER TOUCHING IT.
QUINCUNX ORDER

Other methods of furrow irrigation have been devised which are scarcely less perfect than those used in the California orange districts. One of the best of these is the result of the labors and experiments of Professor A. E. Blount, of the Agricultural College at Las Cruces, New Mexico, and is illustrated in the accompanying diagram. In this case the water is carried in small open ditches, and the furrows are extended in circles around each tree, but the water is never allowed to touch the bark. This method is, perhaps, better adapted to the general needs of the arid region than the more expensive plan of the Californians. It is interesting to note that the modern New Mexico method was developed in the midst of Indian and Spanish settlements, which still pursue the methods of antiquity without the slightest abatement of their evils.

One of the most interesting results of irrigation, in a social and economic way, is its influence upon the density of population. The densest population in the eastern States obtains in Rhode Island, where there are two hundred and seventy-six persons to each square mile. In a representative locality of southern California, which is in the midst of the older settled irrigated districts, there are five hundred persons to the square mile, practically all of them engaged in horticulture by means of irrigation. The Nile lands of Egypt support a population of twelve hundred and twenty-seven persons to the square mile. There is, therefore, no risk whatever in predicting that the arid lands of the West will ultimately sustain much the densest population in the United States.

While the perfect conditions for the irrigation industry exist only in an arid land, there is no doubt that the same methods can and will be used largely in the eastern portion of the United States. There is seldom a year when large districts east of the Mississippi do not suffer heavy losses from the lack of rain at the time when it is needed. What irrigation can accomplish under such conditions has been strikingly illustrated by Dr. Clarke Gapen, Superintendent of the State Insane Asylum at Kankakee, Illinois. This gentleman became convinced that if he could control the moisture during the dry period of the Illinois summer, he could readily produce, on the farm operated in connection with the public institution, the large quantities of late vegetables which he had been in the habit of purchasing for cash. He obtained an inexpensive pumping-plant and engaged the services of a practised irrigator. The result was the saving of an annual expenditure of fifteen thousand dollars for farm products, so that the irrigation system more than paid for itself the first year. Dr. Gapen has stated that the experiment convinced him "that if land is worth one hundred dollars per acre in Illinois without irrigation, it is worth five hundred dollars with it." If this enterprising official had suggested ten years before that irrigation was necessary in Illinois, he would have been regarded as a proper subject for one of the padded cells in his own asylum.

The local application of irrigation is now frequently discussed in the farm journals of Ohio, New York, and other eastern States. The art has been employed for a number of years in the most profitable market-gardens about Boston. The western friends of irrigation have the utmost confidence that during the next century their methods will be extensively adopted in the East, resulting in a very great reduction of the average farm unit, in the assurance of much larger and better crops, and in wonderful social gains.

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